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THE SURGERY OF JAUNDICE.¹

By HUGH R. G. POATE,
Sydney.

JAUNDICE is not a disease, but a sign of disease, and is due to an increase of the bilirubin content of the serum, which normally contains 0.1 to 0.5 milligramme per 100 millilitres. In obstructive jaundice the level may rise to 15 or 20 milligrammes per 100 millilitres. It is to be noted that there are two types of bilirubin. The first is that formed by the breaking down of red blood corpuscles in the reticuloendothelial system, mainly the spleen and bone marrow; but it also includes the Kupffer cells of the liver. This is filtered by the liver cells and undergoes some modification to form the second type of bilirubin, that of the bile. These two types of bilirubin can be distinguished by the Van den Bergh reaction, the liver bilirubin giving a direct reaction and serum bilirubin an indirect reaction; this point is important in establishing the diagnosis. In general, a direct reaction indicates obstructive jaundice, and the indirect reaction either disease of the liver itself or some extrahepatic condition.

It is customary to classify the forms of jaundice in three groups:

1. Obstructive jaundice: (a) causes within the bile ducts, for example, calculus or hydatid disease; (b) causes in the wall of the bile ducts, for example, carcinoma and stenosis (congenital or traumatic); (c) causes outside the wall of the bile ducts, for example, carcinoma of pancreas; glands or tumour in the portal fissure.
2. Toxic or infective jaundice: the liver cannot deal with the serum bilirubin content.
3. Hemolytic jaundice: excessive destruction of red cells, for example, acholuric jaundice.

¹Read at a meeting of the Tasmanian Branch of the British Medical Association on November 26, 1945, at Launceston.

These types may overlap and cause the Van den Bergh reaction to be biphasic.

It is worthy of note that bilirubin does not affect the coagulation time of blood. Surgeons have been reluctant to operate on jaundiced patients because of the tendency to hemorrhage. Generally such patients are bad surgical "risks", because the causative factor may be serious, because renal or liver failure may occur, and also because jaundice has been present for weeks or months.

In recent years a great deal of attention has been paid to the investigation of the hepatic functions and to the means of testing them in disease. As a result of a recent review of current literature and text-books I have drawn up the following tabulation, which seems to be fairly comprehensive:

Functions of the Liver.

1. Carbohydrate-forming or glycogenic.
2. Detoxicating.
3. Excretory (bilirubin, bile salts, cholesterol). Includes Kupffer cells.
4. Protein metabolism (deaminating, formation of urea, uric acid *et cetera*).
5. Hematinic (fibrinogen, prothrombin, heparin, hemato-poietic principle).
6. Fat metabolism.
7. Vitamin storage (vitamins A, D, E and K).
8. Iron and copper storage.
9. Heat production.
10. Blood volume regulation.

For practical purposes in surgery the detoxicating function is one of the most important, especially in diseases of the liver, in chronic thyrotoxicosis and in many chronic wasting diseases. Fortunately we have in Quick's hippuric acid excretion test a cheap and ready means of determining the state of this function of the liver, 70% excretion being the lowest limit of safety. Failure of this function of the liver results in what Heyd in 1931 described as "liver deaths", or what some other workers termed the "hepato-renal syndrome".

Lahey thought that thyroid crises were due to failure of the detoxicating function, but we have shown that acute liver failure is not the sole cause of this condition and other workers have found similar discrepancies.

Cholæmia, which really means bile in the blood stream, is a term which has been used loosely to cover any unusual syndrome occurring in a jaundiced patient and in cases of liver failure generally; because of this misconception the use of the term should be abandoned.

Among other important functions of the liver from the surgical point of view are the production of prothrombin and heparin and the vitamin K balance. It used to be thought that lack of calcium was the main factor in the hemorrhagic tendency of jaundiced patients and intravenous injections of calcium or the oral administration of calcium with vitamin D were advocated, but were by no means universally successful. In recent years it has been shown that a deficiency of prothrombin is the main factor in delaying the clotting time of blood. The production of prothrombin by the liver is dependent on vitamin K. This is present in the photosynthetic portion of plants, and is produced in the human intestine as a result of bacterial activity. Normally this extrinsic factor combines with some intrinsic factor in the liver to effect the synthesis of prothrombin; but bile is essential in the small bowel for its absorption. This is why obstructive jaundice of more than a week's duration lowers the prothrombin level of the serum.

It is of interest to note that the ability of the liver to synthesize prothrombin persists even in the presence of extreme cirrhosis or advanced metastasis of carcinoma, so long as 25% of the liver substance exists. Repeated intravenous administration of fluids in the presence of hemorrhage and continued aspiration of bile from the gastrointestinal tract (by Wangenstein's apparatus or by duodenal tube) may lead to a deficiency in prothrombin and a tendency to further hemorrhage. Transfusion of blood is in itself only additive as far as the prothrombin content is concerned; it does not stimulate further prothrombin production, and its influence on a hemorrhagic tendency seldom lasts more than twelve hours.

If the prothrombin level falls below 40% of normal, hemorrhage is apt to occur; but on the administration of vitamin K a rise from 5% or 10% to 80% or more takes place inside twelve hours, and the prothrombin level remains up for many days and brings the clotting of blood to a normal level. Prior to operation jaundiced patients with lowered clotting time should be given vitamin K for two or three days and there will never be trouble with hemorrhage.

Normally in the blood there is a balance between prothrombin and anti-prothrombin or heparin. When a wound occurs with surgical or other trauma, there is an immediate mobilization of the thromboplastic factors present in plasma, blood platelets and tissues generally, at the site of the injury, which results in a fixation of heparin. This releases the inhibitory effect on the prothrombin, leaving it free to be activated by the calcium ions with transformation into thrombin, which unites with fibrinogen to form fibrin; this in turn enmeshes the blood corpuscles and forms a firm clot, thus controlling hemorrhage. When prothrombin is lacking there is an uncontrolled heparin effect, and hemorrhage occurs which is difficult to control.

These physiological factors have been stressed, as upon them is based the rational surgical approach to the jaundiced patient. If operation is contemplated in such cases, certain investigations are necessary to ensure success, and any deficiencies must be made good in order to safeguard the patient quite independently of the actual diagnosis. The following investigations are essential.

1. A full blood count should be made with attention to the fragility of the red blood corpuscles, and a platelet count. If anemia is present and the hæmoglobin value is below 70%, sufficient blood should be given to bring the level to as near 100% as possible.

2. The coagulation time and prothrombin level of the blood should be determined. If they are below normal, give vitamin K by intramuscular injection or orally with bile salts.

3. The renal efficiency should be tested, with attention to blood urea level, urea concentration, and the presence of albumin and sugar in the urine.

4. The hippuric acid excretion test should be performed. If the result is below 70%, give proteins and glucose liberally.

5. The Casoni and precipitin tests for hydatid disease should be carried out in doubtful cases.

6. Estimation of the bilirubin content of the serum at regular intervals assists in the prognosis.

With these factors in mind, we may now proceed to the question of what is to be done with the jaundiced patient, how long operation should be deferred after jaundice has set in.

If a definite diagnosis can be made our task is relatively easy, and with this aspect in view we may now consider the three classes of jaundice already mentioned.

Obstructive Jaundice.

Causes within the Bile Ducts.

Probably the most common form of obstructive jaundice seen by the surgeon is due to biliary calculi. In most cases these come down from the gall-bladder, and there is a characteristic history of acute biliary colic followed in a day or two by jaundice. In all such cases operation should be undertaken without delay. But there are cases of jaundice due to stones in the common duct in which pain is absent.

A case in point, which occurred some years ago, is that of a woman, aged thirty-four years, who had jaundice of four months' duration. At operation this was found to be due to dozens of calculi impacted in the common bile duct and extending up into the hepatic ducts. She had no trace of a gall-bladder or cystic duct, and is the only patient I have met with congenital absence of the gall-bladder. She did well, and when examined five years later she was still in good health.

In another case encountered fairly recently, a refugee from Austria had a history of intermittent jaundice of fourteen years' duration despite much medical treatment. As his jaundice had recently deepened, operation was decided on. Hundreds of calculi were found in the common and hepatic ducts going up to ten to fifteen centimetres into the liver. The gall-bladder also was full of stones and was removed. Injection of radio-opaque material yielded an interesting picture of his dilated ducts, with one calculus still deep in the right lobe of the liver. He had had no further trouble in two years.

Intrahepatic rupture of a hydatid cyst is occasionally puzzling in diagnosis, and particularly so if infection has occurred.

The most interesting case of this character I have met with was that of a young man, aged twenty years. In September, 1928, he developed acute pyorrhæa, which was so severe that in October he had all his teeth removed, as they were loose and painful. In November he had some rigors and a dull ache in the epigastrium and became jaundiced. This condition cleared up after a few weeks, but recurred early in December, and as his condition was becoming serious he was sent to Sydney on December 31, having been jaundiced for over three weeks. He had an irregularly elevated temperature, leucocytosis and an enlarged and tender liver. It was thought that he was suffering from suppurative cholangitis, but when a tender swelling developed in the region of the gall-bladder with an exacerbation of symptoms, it was decided that operation was necessary. The gall-bladder appeared to be in a condition of acute empyema, and thick pus was aspirated. The common duct was greatly enlarged, and after it had been incised some ounces of thick pus poured out and then hydatid membrane appeared. It took some time and patience to clear the duct, but finally this was achieved, and after the ampulla had been dilated, tubes were placed in the common duct and gall-bladder. He recovered and all went well for twelve months, when acute symptoms with jaundice recurred. The common duct was exposed once again and found full of purulent debris. This was cleared away and a tube was passed up the duct for about twenty centimetres into the liver, as it was found impracticable to establish direct drainage with the cavity in any other way. Through this tube the cavity was washed out twice a day for some three weeks, and by this time clear bile only was draining away. The wound healed immediately on removal of the tubes, and he has remained well since, having been examined only last year.

Causes in the Wall of the Bile Ducts.

Primary carcinoma is a rare event, or at least it is rarely discovered as an undoubted entity; but the main bile ducts may be involved by carcinomatous spread from contiguous viscera or by metastasis.

Stenosis of the common hepatic duct or of the common bile duct is relatively common as an acquired lesion and may be met with also as a congenital condition.

Jaundice in children due to congenital atresia of the bile ducts becomes evident at or within a day or two of birth. Prognosis is invariably fatal if the child is left alone; but Lade and Gross, in *Annals of Surgery* in 1940, reported 45 cases in which exploration was carried out, and it was found possible to perform some form of anastomosis to the alimentary tract in eight cases; five of the children survived—a small percentage, certainly, but a notable achievement in a condition previously regarded as hopeless.

Congenital cystic dilatation of the common bile duct is a rare condition, of which only 175 cases have been recorded. It presents as intermittent jaundice, with epigastric pain and swelling coming on in early childhood.

In adults acquired stenosis is usually the result of surgical damage, but it may occur otherwise. I have encountered several cases of acute cholecystitis, in which a large stone has ulcerated through to the common hepatic or common bile duct and caused stenosis. Cure of acquired stenosis is difficult, as may be gleaned from the variety of operations suggested; but the recent introduction of the vitallium tube promises better results than any other method.

Causes Outside the Wall of the Bile Ducts.

The most common causes outside the wall of the bile ducts are carcinoma of the head of the pancreas and chronic pancreatitis. The condition is generally evidenced by the onset of symptomless jaundice in middle or late life with the presence of a palpable gall-bladder. This latter consideration led to the formulation of Courvoisier's law that a distended gall-bladder in a jaundiced patient is not due to gall-stone impaction; but it does not hold in all cases. The onset of jaundice may be insidious and intermittent; but ultimately it persists and deepens until really black jaundice is established. On many occasions stress has been laid on the necessity of conducting a laparotomy in all such cases. In the majority it is possible to perform a cholecyst-gastrostomy or cholecyst-duodenostomy, thereby relieving the jaundice and its associated intolerable itching; moreover, life is prolonged, and when the end does come it is usually peaceful. The average expectancy of life after such an operation is about nine months and the longest I have known was just over two years.

I find it difficult to differentiate nodular chronic pancreatitis from carcinoma.

I now seldom give the patient a diagnosis of carcinoma since I gave a grave prognosis to a man upon whom I operated many years ago; he came to see me five years later, having gained some four stone in weight and enjoyed excellent health after a cholecyst-duodenostomy.

As a converse to this there is the case of a man who developed symptomless jaundice in middle life and was told by eight doctors in Hobart, Launceston and Melbourne that he had carcinoma of the pancreas and nothing could be done; but he came to Sydney for a final confirmation. He was surprised when I suggested laparotomy, to which he readily consented after considering the pros and cons. A large mass was found in the common duct area, which at first sight suggested carcinoma; but on closer examination the appearance was not typical. Upon exploration the mass was finally found to have been caused by a large gall-stone ulcerating through Hartmann's pouch into the common bile duct. For three days, three or four pints of thin watery bile drained away each day, and he had to be given fluids intravenously to compensate for the loss; but he finally recovered and has remained well for several years.

Before leaving this subject I must recall Lord Moynihan's words:

No one living is infallible in the differential diagnosis of obstructive jaundice. The diagnosis is always so

difficult and the chance of a life saved so important that however positive the evidence of malignancy I now advise operation in all cases.

Toxic or Infective Jaundice.

Toxic or infective jaundice is really the concern of the physician and may be due to a variety of causes, one of which, amebic abscess, has given rise to a good deal of anxiety by its occurrence in our armed forces serving in tropical areas. Acute infective hepatitis is common, the syndrome being fairly typical; but the jaundice seldom grows very deep, and it begins to clear in two or three weeks.

Occasionally diagnosis is difficult, and it may be expedient to call in the services of a surgeon at times to establish the patency or otherwise of the bile ducts, and the condition of the pancreas, and possibly to take a biopsy of the liver. Such a case came to my way only a month ago.

A man, aged fifty-two years, had in the last five years had three attacks of severe jaundice lasting to some extent from two to six months, with slight attacks lasting one or two weeks in between. He had had no pain, but occasional nausea without vomiting occurred, and he remained at work. The Wassermann and Kline tests produced negative results, as did all other investigations except the Van den Bergh test, which produced a biphasic reaction. The liver was enlarged, but at operation the spleen was found to be small, the pancreas normal and the bile passages apparently normal, so a biopsy of the liver was taken. The pathologist reported the condition to be primary biliary cirrhosis.

Infective cholangitis or pyelophlebitis may occur after infective processes in the abdominal viscera and particularly after gangrenous appendicitis. The development of jaundice with intermittent rises of temperature and maybe rigor, originally known as Charcot's intermittent fever, is of grave import, and drainage of the biliary tract along with chemotherapy may save a life now and then.

It seems to me that physicians hold their jaundiced patients too long, even up to many months instead of weeks. In *Surgery* of January, 1941, Bloomfield analysed a series of cases, and showed that in 80% simple toxic hepatitis cleared or began to clear definitely by the twenty-sixth day and in 100% by the end of five weeks. This confirms my own experience that if a positive diagnosis cannot be established in one month, a surgeon should be called in, as with the safeguards already detailed operation can be undertaken without undue risk.

But a point for surgeons to remember is that toxic hepatitis is not particularly a disease of relatively young people, and although 66% of patients are aged between thirty and fifty years, the remaining proportion is fairly evenly distributed before and after these age periods.

Hæmolytic Jaundice.

Hæmolytic jaundice is due to excessive destruction of red corpuscles and the consequent formation of bilirubin in a larger amount than can be dealt with by the liver. It is really pure pigmentary cholemia, and the liver is so overloaded that the bile passages may become choked with thick pigment mud or even with pigment calculi, with the production of secondary obstructive jaundice.

The most classical example of this is acholuric jaundice, with its increased fragility of the red cells, in which the spleen seems to be the main faulty factor. When performing splenectomy in such cases, always investigate the condition of the gall-bladder and main bile ducts, as these may need clearing either at the same time or at a second operation a few weeks later.

Conclusion.

In conclusion, I would say that with modern methods of investigation at hand and with adequate precautions the surgeon need no longer fear operation on the jaundiced patient, and that the old mortality rate of 40% to 60% is now reduced to negligible proportions. The main point is that the earlier we can operate, the better the patient's chance of survival, and even if we cannot effect a cure in all cases, we can ameliorate the condition in nearly every case.

PAGES FROM A MILITARY PSYCHIATRIC NOTEBOOK.

By WILBUR D. CURTIS,
Melbourne.

THE first part of this collection refers to the recent Borneo campaign. The second is a general discussion of various aspects of military psychiatry as seen by myself. Some figures are given, some comparisons made, some views expressed. No claim for completeness is made.

The following figures of psychiatric casualties in the Borneo campaign furnish a rather unusual comparison with those of previous campaigns. There were several distinctive features in this our final phase of war. All battle and other casualties from Borneo and surrounding areas passed directly or indirectly through a base composed of two general hospitals several hundreds of miles from the combat zone. Evacuation to the base was largely by air and was rapid, with little delay. This was particularly so in the case of the psychiatric casualties. These were often admitted to the base within twenty-four or thirty-six hours after coming to medical notice. To offset the latter advantage, the base was far removed from the active war theatre. In addition, opportunities for reposting down-graded personnel were very small indeed. This meant that the vast majority of patients destined for a "B2" classification were of necessity evacuated to Australia, many before conclusion of their treatment. There was some strain on the accommodation which was an added reason for this. An endeavour was made to let all these men know that their further evacuation was not strictly on medical grounds, but for tactical reasons.

Another feature worthy of mention was the evacuation from the base of psychotics requiring restraint. The manics, some of the hypomanics and those with unresolved schizophrenia comprised this group. The evacuation was by air. Patients were strapped down to the stretcher and heavily sedated prior to being emplaned. A Royal Australian Air Force nursing sister travelled with the patients. It was a two-day journey to the first hospital base in Australia. These patients did not travel well without heavy and continuous sedation. The excellent cooperation of the Royal Australian Air Force in the matter of transport was a great help. In fact, without it, there would have been serious difficulties owing to the high rate of psychotic admissions.

The following is a survey of the psychiatric casualties over the period April 14 to October 8, 1945, treated at "X" and "Z" general hospitals at this base.

TABLE I.

Casualties.	"X" Hospital.	"Z" Hospital.	Total.
Psychotics	17	127	144
Psychopaths	13	43	56
Psychoneurotics ..	105	165	270
Mental defectives ..	5	5	10
Men with no disease ..	—	2	2
Total	140	342	482

Table II shows the distribution of psychotics.

Placed in the first group were the schizophrenics, those with schizoid states and the regressing unstable schizoid psychopaths; 65.3% of psychotics were in this category.

Among the psychopaths were the various cycloid, the schizoid, and the asocial abnormal but more or less stable personalities—the misfits. Included here also were those with inadequate personalities or those with personality defects and the few sexual perverts encountered. For classification purposes distinction was drawn between the regressing schizoid psychopaths (included among the psychotics), the present group, and the mental defects

whose condition often had a mild schizoid colouring. These were separately grouped. A large number of subjects with anxiety states showed varying degrees of inadequacy, but were classified according to their dominant symptoms.

Table III shows the various conditions affecting psychoneurotics.

TABLE II.
Psychotics.

Type of Psychosis.	"X" Hospital.	"Z" Hospital.	Total.
Schizophrenic reactions ..	7	87	94
Mania	3	8	11
Hypomania	3	11	14
Depressive psychosis ..	2	15	17
Paranoia	—	1	1
Acute confusional psychosis	2	4	6
Toxic exhaustion psychosis	—	1	1
Total	17	127	144

TABLE III.
Psychoneurotics.

Condition.	"X" Hospital.	"Z" Hospital.	Total.
Anxiety state	78	128	206
Hysteria	13	12	25
Reactive depression ..	4	10	14
Neurasthenia	3	3	6
Hypochondriasis	2	4	6
Obsessional neurosis ..	1	2	3
Epileptic equivalent ..	1	2	3
Exhaustion state	3	4	7
Total	105	165	270

Included in the first group were those with fear states, anxiety neuroses and anxiety hysterias. This group comprised 76.6% of all psychoneurotics. The classification is arbitrary, as probably half the psychoneurotic casualties may be said to be in some degree inferior or inadequate. The second group were those with frank conversion hysteria; these comprised 9.6%. There were very few other neuroses. Uncomplicated exhaustion states were infrequent, and all such casualties were returned to duty after rest, sedation and good feeding.

Mental defectives comprised 4.8% of psychiatric casualties. None of these men should have been accepted for service.

Only two patients were returned with the finding "no disease", owing probably to the efficient elimination of the "bludger" by the regimental medical officers.

AN ANALYSIS OF 343 PSYCHIATRIC CASUALTIES.

Full records were not kept of all cases. The following is an analysis of 343 consecutive psychiatric casualties at "Z" general hospital from May 28 to October 8, 1945. Apart from some of the less severely affected psychoneurotics, all psychiatric casualties were treated at this hospital over that period. The factors listed were age, service, home environment, neurotic family history, previous evidence of neurotic tendencies, and battle stress encountered. With reference to home environment, the adjectives used were "normal", "fair", "poor" and "bad". This, of course, is the personal impression of the examiner, no fixed standard being possible. An endeavour was made to maintain an impartial constancy of assessment throughout. Previous neurotic tendencies were described as "nil", "mild", "definite" or "marked". Again, the conclusions are open to the same objection. A neurotic family history was either present or absent; the degree was not considered for the purpose of this review. Battle action was described as "nil", "little", "average" or "severe".

Psychoneuroses. The Anxiety States.

The average age in the anxiety group was twenty-seven years, and the average length of service was forty-four months. These figures as such are of little significance, since the average age and length of service of all troops in the area were unknown.

Home environment was "normal" in 32% of cases, "fair" in 27%, "poor" in 15% and "bad" in 26%.

Previous neurotic tendencies were noted as "nil" in 7% of cases, "mild" in 50%, "definite" in 33% and "marked" in 10%. It is noted that only one patient in the "marked" group had experienced average battle stress. The remainder had none at all or broke down in their first action.

A neurotic family history was present in 56% of cases. These figures are all dependent on the patient's statements and could not be checked, but are probably a fair enough estimate.

Battle action was noted as "nil" in 51% of cases, "little" in 25%, "average" in 15% and "severe" in 9%. It is of interest to note that two of those who broke down only after severe battle stress (in action at El Alamein, Finschhafen, Sateberg, Tarakan) had shown neurotic tendencies prior to enlistment, together with a poor home environment. This would tend to confirm again the observation that a soldier's behaviour under battle stress cannot always be predicted from a personality study on paper. As a general rule, it was found that the more stable the pre-enlistment personality, the greater the stress encountered prior to breaking down. However, the figures are complicated by the large percentage (51) of casualties who broke down, never having experienced battle stress. The causes of these breakdowns were legion. In some instances, domestic problems were major factors. In others an inability to make an adjustment to army conditions with the communal life, restrictions, suppression of individuality *et cetera*.

Deep therapy was given in a few selected cases only. The function of the hospital in this area was in many respects as a lines of communication staging post. A greater number were returned to Australia than was the case in New Guinea.

Insulin therapy to subcoma level was used in five cases; all these men were subsequently down-graded and retained in the area. "Pentothal" was used for abreaction and "syntho-analysis" in 25 cases. This procedure was found to be most successful in the recent acute fear states, in particular for subjects with some conversion symptoms. In all cases some psychotherapeutic follow-up was made.

Of the 128 in the "anxiety" group, 15 were returned to their units, two subsequently breaking down again and being reclassified "B2"; three were down-graded to "B1"; 34 were down-graded to "B2"; the remainder, 86, were evacuated to Australia. Among the 128 there were eleven officers; all were evacuated apart from one, who was returned to his unit.

Hysteria.

There were twelve casualties with hysteria. Seven were down-graded, five were evacuated. Conversion symptoms included aphonia, blindness, deafness, amnesia, fugues, paralysis, gross and bizarre twitching, abnormal gait. There was one classical example of *astasia abasia*. With the exception of a few who stammered severely, all were improved and the majority lost their symptoms prior to discharge or evacuation. "Pentothal" and hypnosis were useful adjuvants to therapy in these cases. An interesting feature of this group was the average age of twenty-three years (contrast twenty-seven years for the "anxiety" group).

Reactive Depression.

The men with reactive depression were those with no overt anxiety. Brief convulsant therapy was successful, combined in some cases with probing under "Pentothal" anaesthesia. Psychotherapy given was not deep. All except one of the patients were evacuated. Return to duty or even down-grading in this area was considered uneconomical.

Other Neuroses.

The group of subjects with other neuroses was too small in number for any conclusions to be worth while. All those with uncomplicated exhaustion states, including two officers, were returned to duty. In the two "epileptic equivalent" cases in which a follow-up was possible, abnormal electroencephalograms were obtained.

The Psychoses.

Among the 127 psychotics, the preponderance of schizoid reactions was pronounced (68.5%). A feature was the large number of transient schizoid states. (These have been included by some among the confusional states—a matter of individual choice in terminology.) In the period during which the patients were held at the hospital it was not possible to come to any clear-cut prognostic conclusion. Resolution was rapid with convulsant therapy. An attempt was made to investigate with the aid of "Pentothal" narcosis the thought process of many of these men with schizoid states. In a considerable number of cases emotional tension was disclosed. Such an anxiety component could not be demonstrated in the cases of frank schizophrenia. Results were inconclusive, however, as several of the former subjects retained typical schizoid ideation and thought association right up to full anaesthesia with "Pentothal" (the intravenous use of "Sodium Amytal" was not found as efficacious as "Pentothal" for any probing or abreactive technique).

In a United States Army publication concerning the Tunisian campaign,⁽¹⁾ Grinker and Spiegel make the statement that subjects with true psychoses can be differentiated from those with severe psychoneurotic regressions by their responses under "Pentothal" anaesthesia. They state that psychotics never display release of anxiety during this procedure. This has not been my experience. Patients have been seen with a pseudo-psychotic exhibition of an hysterical nature—gross regressions—but these are not included among this group. It is thought, however, that with regard to classification one cannot afford to be too dogmatic in psychiatry. Mention will be made of this in the later discussion.

In a certain proportion of schizoid states the psychotic onset was shown at the threat of battle rather than at the actual impact. Again, this finding was inconstant. There was only one case in which the onset was not associated with the threat of battle or with action itself. This observation is not considered to apply to schizophrenics. As far as could be ascertained, the previous personalities of these men with transient psychoses appeared to deviate less from normal than one would expect. Data were incomplete, as several were perforce evacuated prior to complete remission. It is greatly regretted that a routine Rorschach test could not have been given in these cases after resolution. It is thought that further investigation and research in this field would not be without results.

Of the other psychotics, the manics and hypomanics were evacuated under restraint. No treatment other than sedation was given. The depressive psychotics received routine convulsant therapy. In no case did no improvement occur; in several complete remission occurred prior to evacuation.

No radiological spinal check was made. Only one subject complained of mild root pains, which cleared on suspension of treatment. There were insufficient other psychoses for the findings to be of any clinical or statistical value. In all, among the subjects with psychoses (chiefly schizoid and depressive), 257 "Cardiazol" seizures were induced. Full insulin coma was not induced in this area. Twenty-three were evacuated unimproved, 82 were improved, 22 were symptomless on evacuation. It has been learned from follow-up examinations that several relapsed before insulin coma treatment was begun. The exhibition was also noted to vary. Several who showed, for example, mild manic and pronounced schizoid features on evacuation finished in a psychiatric base in Australia with hypomania. Two evacuated with the diagnosis of "manic states" displayed increasing schizoid features, and their condition was finally diagnosed as schizophrenia. All psychotics

were returned to Australia. Of the 127, eleven were psychotic officers and three were females.

In the period under survey (April 14 to October 8, 1945) the number of psychiatric casualties who passed through the two hospitals was 482. The total number of Australian Military Forces casualties over the same period was 9,919. Thus the high figure of 4.86% were psychiatric casualties; 7% only of these were returned "A1", 13.1% were downgraded, and the remainder were evacuated.

DISCUSSION.

The casualty figures included in this survey differ from those in other campaigns. The number of psychotics is the first outstanding feature. To account for this is difficult. It is possible that the large proportion of unseasoned troops taking part may have been a factor; but this seems insufficient to account fully for the figures. A number of these psychotic casualties were out of Australia for the first time. Again, a number had seen several campaigns and had survived previous action. A further number had never seen action. Perhaps the imminence of the war's end played a part in the production of psychotic "flight" reactions.

I admit that the question is unanswered.

The incidence and type of psychoneurotic casualty encountered differ in no material way from those seen elsewhere and by other observers. The chief feature is the number of enlisted personnel with previous neurotic trends who broke down under little or no stress. Again the point is emphasized that a more careful *questionnaire* on enlistment is all-important. Doubtful recruits could readily be referred for psychiatric opinion. The saving in time and money to the nation by such a procedure would be more than worth while, both during the war and afterwards. A large number of men now receiving a pension would probably have been neurotic whether there had been a war or not. The fact that they were accepted as fit for service and that they broke down while on service entitles them to repatriation benefits and possibly to a pension for life.

General Considerations.

The disposition of the medical services in the field largely depends on the size of the campaign concerned, on the terrain traversed and conditions both geographic and climatic, on the lines of communication, and last but not least, on the medical personnel available.

The number of trained psychiatrists in the Australian Military Forces throughout the war years was inadequate. Despite this early recognized deficiency, it is unfortunate that only recently was an endeavour made to train suitable army doctors in this branch of medicine. Good work was done along these lines at a military hospital in Australia. In this field Australia was left far behind here by Britain, Canada and America. Numerous articles have appeared in the journals during the war years on various aspects of psychiatry in the services. Several of these have stressed the importance of forward psychiatric treatment centres. Cooper and Sinclair,¹⁰ in 1942, expressed the opinion that a war neurosis clinic and treatment centre was necessary in the divisional area of operations. This opinion was largely based on experiences in the Middle East. Despite these and other urgent recommendations, Australia lagged behind. The work that was done was sound, at one or two psychiatric clinics and at an Australian convalescent depot in the Middle East. Until recently psychiatrists in the Australian army have not been officially recognized as such. This fact, together with the real shortage of trained staff, hindered any substantial progress in psychiatric spheres.

By August, 1942, the British army in the Middle East had well-established specialized psychiatric hospitals and centres and psychiatric divisions of convalescent depots. In the Burma campaign,¹¹ specific psychiatric treatment centres were set up in forward areas either at field ambulance or casualty clearing station levels with entirely satisfactory results. There was a pool of psychiatrists, which was drawn upon according to the tactical situation. Psychiatrists were thus posted to hospitals, clearing stations and field ambulances, without disturbance of the

respective establishments. Highly favourable comments were passed by all formation commanders, including divisional commanders. This applied in particular to the saving of manpower and transport by the treatment of patients on the spot rather than after evacuation from the battle zone. Of the psychiatric battle casualties, the high percentage of 60 were returned to full combatant duty.

Craigie,¹² in 1942, from Middle East figures at a British psychiatric treatment centre, showed that about 55% were returned fit as class "A1". (In passing, it is difficult for me to understand the figure, from one hospital quoted by Craigie, of 48% of psychotic casualties returned to full duty.)

Cooper and Sinclair,¹⁰ in a report on the psychiatric casualties in Tobruk (1941), show that 38% returned to duty as fit in class "A1". Sinclair,¹³ from a general hospital in New Guinea (1942-1943), gives a figure of 48% of psychiatric casualties returned to their unit as class "A1". The writer's figures from another general hospital in New Guinea (1943-1944) gave 37% as returned to duty in class "A1".

Figures given by United States Army Air Force psychiatrists from Tunisia¹⁴ and the European theatre¹⁵ are in the proximity of 62% of psychiatric casualties returned to full combatant duty.

The Borneo figures are not used for comparison here, as the base was not comparable with those from which the other figures were compiled.

The discrepancies in these figures may be accounted for in several ways. First, it is impossible to standardize statistics from different theatres of war or from different phases of the war as a whole, and those compiled by different observers. However, if the figures are taken at their face value, it is apparent that those from the established British treatment centres in the Middle East and in Burma, and from the United States centres in Tunisia, show a much higher proportion of returns to active duty. It is suggested here that the difference is mainly due to the more highly organized psychiatric services concerned, with the facilities for earlier diagnosis and treatment in forward areas. It has been a universal experience that the longer treatment is delayed and the farther away from the front line treatment is commenced, the poorer is the prognosis. Symptoms become more fixed, and there is an increased likelihood of conscious overlay, while, far from least, the probability of ultimate pensions looms larger on the horizon. The primary function of forward psychiatrists should be to fit men for their jobs and to recommend more suitable postings. Those evacuated should comprise only those unfitted for front-line service and those requiring more prolonged treatment, or those whose useful retention is frankly dubious. Treatment of all evacuated personnel should be instituted prior to evacuation—in other words, at the earliest possible moment. This applies equally, if not more, to psychotics than to neurotics. Despite differences in precipitating factors and mode of onset *et cetera* of army and civilian psychoses, early and adequate treatment has considerable effect on the ultimate prognosis.

All too often one hears the opinion: "He'll be nuts anyway—why bother?" If psychiatrists were to content themselves with such a philosophy, there would be no progress. Even if in the army a psychotic will not render further efficient service, one's job in forward areas should not end with mere diagnosis. If he is passed on down the line with no physical treatment, the psychosis becomes established and the prognosis poorer. In the New Guinea and Borneo campaigns, convulsant therapy, when indicated, was commenced on diagnosis. In the two hospitals in New Guinea at which psychiatric facilities were available, insulin shock therapy was also given as required. This latter procedure was not possible in the Borneo campaign, as all the psychotics passed through the one hospital and the large numbers necessitated early evacuation to avoid undue congestion. Of those given convulsant therapy, the majority after several induced seizures were sufficiently stabilized to withstand air evacuation for further treatment and insulin therapy in Australia. Quite apart from the saving of manpower and treatment, it is considered that the establishment of forward psychiatric treatment

centres in the army is an important essential from both a military and a medical point of view.

It is hoped that these lessons learned in war can be put to some constructive use.

However, the urgency has passed now with the cessation of hostilities. Civilian psychiatrists will bear the brunt of the war's twisted and warped aftermath. The rehabilitation of service personnel is not an easy matter; but for the maladjusted and incapacitated psychiatric casualty it is of major importance. Yet if we continue as in the past, these men will receive a placebo of a pension and be passed off as one of the regrettable but inevitable legacies of war. Are they? What is to prevent the establishment of an adequate rehabilitation and repatriation programme whereby these men may receive constructive help and reeducation in their adjustment to and placement in civilian spheres, by a trained staff of psychiatrists, psychologists and social workers? And the establishment of combined in-patient and out-patient clinics in all major cities? How many army psychiatrists who have taken more than a passing interest in their patients, find that their efforts have often proved vain, owing to lack of adequate and constructive follow-up examination after their discharge? These men cannot be treated by empty superficial sympathy—they have maladjusted personalities and require individual attention. Are we content to stand aside with the smug aphorism: "That's his pigeon"? Or are we prepared to stir out of our inertia, to shoulder our responsibility to both the individual and community and to do something about it?

Aspects of this problem have been presented by Sinclair⁽¹⁾ and Dibden⁽²⁾ in previous papers. I wish to add a vehement approval to those pleas, whose makers are by no means voices crying in the wilderness.

Diagnosis.

One is faced in psychiatry with a kaleidoscopic complexity of behaviour disorders and emotional abnormalities and distortions. There are admitted difficulties at times in diagnosis and classification, particularly under service conditions, and many patients require several sittings before a conclusion is reached. A great deal will always depend on the experience and clinical acumen of the examiner; but now that physical methods of treatment of the psychoses are becoming more generally accepted, one is prone to give treatment according to the diagnosis, empirical though that treatment may be. In view of the host of distinct personalities and varying patterns, however, does it not seem unlikely that reactions and symptom exhibitions on breakdown tend to conform to specific patterns? Should not one strive yet more to treat the individual patient, the disease entity being relegated to second place? It is learned that there is a hysteroid personality which, given sufficient stress, will display a hysterical dissociation or infantile regression. Some schools regard the various psychoneurotic and psychotic conditions as varying levels of regression dependent on the personality concerned and the stress encountered. Yet we read that these clinical entities within definite limits are distinct. A depressive psychosis is an affective disorder. The schizoid is far removed from the manic. The paranoid is unlikely to present conversion hysteria. The obsessional subject will not become hypomanic. If allowance is made for the diversities in personalities, reaction patterns and environment, could it be that, given a specific personality, there is no specific symptom complex on breakdown? With greater stress, could an anxiety neurotic become hebephrenic? Could an hysteric become catatonic? I tender the suggestion that such things may happen.

Two Case Reports.

The following is a case history, as taken, of a young soldier, aged nineteen years. The place is New Guinea; the time is November, 1943.

Private L.G.E. was admitted to hospital on November 2, 1943, having required restraint for the previous two days. No history was obtainable. He was aphonic, restless and inclined to be violent in resisting any movement, and was apparently confused and disorientated. The impression of acute hysteria was gained, and he was closely observed.

Later stertorous grunting and breathing began, which would stop only after strong measures; the patient was cooperative. He was physically normal, except for absence of the pharyngeal reflexes and diminished deep reflexes. He was given subconvulsant "Cardiazol" treatment on the following morning. Treatment was difficult, owing to twisting and contortions. He was much more amenable later in the day, but still retained the majority of his hysterical symptoms. He told, in a whispering baritone voice, some of his earlier life. He had no father, no mother, no brother, no sisters. He had been brought up in an orphans' home, and was a poultry farmer prior to his enlistment. He balked and shuddered at the mention of recent happenings over the range. He was reassured, but gave no answer; he was withdrawn.

On November 5 he was slipping back. He was aphonic, and adopted a catatonic stance and facies, watching the while, however, through the corner of his eyes. He was unapproachable and non-cooperative. Eight "Cardiazol" seizures were induced up to November 27, when the treatment was suspended owing to violent resistance. During this period he had regressed to a more archaic level—frank schizophrenia. It was thought that the vigorous methods employed in the treatment of a subject with a shy, retiring, introverted personality had caused this regression.

At this stage he appeared dissociated from his environment, having lost all signs of hysteria; he was remote, preoccupied and catatonic. Insulin treatment was begun on November 29. He had nineteen comas, totalling seventeen and a half hours. The first was induced with 130 units, passing to 150 units prior to completion. A pronounced amelioration of his symptoms occurred, with return of speech, orientation and cooperation. He began occupational therapy. Treatment was suspended on January 1, 1944. However, he displayed a slight return of hysterical symptoms and shuddered at any noise or mention of recent events. On one occasion when the medical officer appeared in the ward with a syringe (for another patient) he ran out of the ward.

On January 2 psychotherapy was begun. He was able accurately to give various pre-enlistment dates and incidents with a gradually increasing rapport. He was unable to remember events just prior to his evacuation to hospital, but recalled boarding the aeroplane and being strapped down. The first event he remembered after arriving was a "needle". His father had died when the patient was aged fourteen years; he had been a partial invalid for years following injuries sustained in the war of 1914-1918. His mother had died when he was an infant. Over the next few days many significant facts were brought to light. He had had several minor convictions in children's courts for petty theft and delinquency. He was sent to a boys' home on several occasions. He said that he had committed no offence since the age of twelve or thirteen years. For three years before enlistment he had been a poultry farmer. A few years earlier he had found a body on a road one night—a suicide, with the head blown off. He described this event vividly with feeling. He had been questioned at the time, and was afraid that he was a suspect owing to his past record. This still worried him a little. He had been rather nervous and apprehensive of seeing wounded men and in coming in contact with authority ever since then. Since being in the army he had one "away without leave" charge, and had been fined £5. He had had appendicitis in April, 1942, and herpes zoster in June, 1942. He had had numerous periods of dyspepsia, being in hospital on more than one occasion. He had arrived at Milne Bay on January 1, 1943, and had been evacuated to hospital with dyspepsia a few weeks later; X-ray examination revealed no abnormality. He had returned to Milne Bay after three or four weeks (in April), and went to Lae with his unit in September, 1943. He was there for one month, but experienced no action apart from bombing. He had been rather "jumpy" at Milne Bay after the bombing of a petrol dump close by. He was finally sent to hospital at Lae "because of a bit of a shock". In a suggestive state, during which considerable resistance had to be overcome, he eventually disclosed the occurrence of a severe air raid with explosive and incendiary bombs, and the fact that he had been terrified. The remainder of the story was then fairly clear and was told with considerable abreactive tremor and excitement. After this, his progress was obvious. He talked, nevertheless, with an unusual and soft voice, which may have been his normal one.

On January 13, 1944, his progress so far was noted as more satisfactory than was to be expected. His intelligence quotient, however, was very low. He left school at the age of thirteen and a half years, in the fourth grade, and his insight was limited largely owing to his mentality. On January 23, 1944, he was evacuated to Australia.

This man was quite unfitted for army service. Nothing further has been heard of him, and his subsequent condition is unknown.

In the earlier part of these notes, mention was made of schizoid states and the psychotic-like regressions of an hysterical nature, with the differential diagnosis. Is there any line of demarcation between partial and complete dissociations? Some investigators have found anxiety components in the hysterics and denied their existence in the psychoses. Others have failed to confirm this finding. The following is the clinical record, as taken, of a soldier, aged thirty-one years. The place was New Guinea; the time was January, 1944. The condition was regarded as an acute hallucinatory paranoid, schizoid state.

Sapper J.P.H. was admitted to hospital on January 2, 1944. The condition was characterized by an acute hallucinatory onset with a somewhat sudden return to normal. The main features were vivid hallucinations with delusions and complete environmental divorce. The condition was not, however, continuous or constant. Even during the acute phase he was aware of my identity, although he was confused.

He was admitted to hospital bedraggled and deluded. He said that he had been hit on the head with a bullet. He also said that he had been maltreated at his unit, and as a result had felt dazed since. Physical examination revealed no abnormality. He was watched. Later on the day of his admission to hospital he wandered off into the officers' lines and was found dissociated and babbling the rosary. He was quite unapproachable and resistive; he called me Satan and prayed again. Under "Pentothal" narcosis emotional tension was disclosed, but nothing else of significance. He remained confused and deluded. "Cardiazol" treatment was begun on the following morning. After the second seizure, he was lucid; further details were obtained. He had been in hell; he had been there for two days; and he was "dumped" with nothing to do. He became tired of this, so he approached Satan and demanded work; he was told there was nothing to be done. Then Satan's minions gathered around to "beat him up". They left him lying, and later a padre came along. (He was interrupted here, and asked what the padre was doing in hell. He replied: "I don't know; that's what's puzzling me.") The padre, however, "led him astray". On being asked how, he said: "Oh, we won't go into that now." Then he went back to the casualty clearing station along the Sattelberg Road in an ambulance. Everyone he passed raised their hats; then the doctors got to him and forced water down his mouth until he almost burst; then they kept dragging at his eyes. "It's funny about those bullet holes, I can't find them", he said, feeling his head. Following this comparatively lucid period, he again relapsed and reverted to lying on his bed all day muttering the rosary and addressing me and the sister as "Satan and his minion". "You swine, Satan, you're trying to drag the life out of me, you swine."

After his fourth "Cardiazol" seizure he exhibited a pronounced change. He was able to tell me of recent events in his unit, although he was somewhat confused—"My visit to hell all seems so real!" For twelve months he had been in Papua and New Guinea. He had had no sickness in the army in two and a half years, and had been four months at Finschhafen as a truck driver. Life was monotonous. He was playing cards one night and felt rather dizzy; then there was a raid and he thought he was hit on the head by a tommy gun bullet (this was not so). He thought he was dying and called for a priest. One of the men in his unit had recently committed suicide, and now the priest thought he had done likewise. "Then I went to hell; no, I didn't. By jove, I'm not sure. Did I or didn't I? It all seemed so real, doctor—was it me?" He had been rather worried about recent air raids, and the monotony of truck driving was very depressing. His only complaint was that he felt tired. He had three sisters and one brother alive and well. He was the youngest; his mother and father were dead. His father had died of kidney disease, aged fifty-five years, and his mother of cardiac failure, aged fifty years. The patient was single. Prior to his enlistment he was a waiter at a hotel for ten years. He drank a moderate amount in that time. He had had gonorrhoea at the age of seventeen years, but no syphilis and no other serious illnesses. He had left school at the age of fourteen years. He had passed in first year, and found the work hard. His hobbies were golf and tennis. He had had no difficulties in making friends—in fact, the reverse was true. He had no domestic or financial stress, and no evident background to account for his breakdown.

After the next "Cardiazol" seizure he appeared normal. He was profusely apologetic to me and the staff for his behaviour, whatever that had been. He said that he thought he had been in hell, and he was praying intensely for being in hell and for his soul. His manner was smooth and apologetic. No other details were obtainable on further probing. The mechanism of his condition was superficially explained, and he showed some insight and eager cooperation.

On January 19, 1944, with the exception of a minor anxiety state, he had completely recovered. He was evacuated to Australia.

A report from this man's unit showed him to have displayed no previous psychiatric abnormality other than pronounced nervousness during air raids. Clinical records from the general hospital in Australia from which he was discharged showed him to have good insight and a minor residual anxiety state. No abnormality was detected in thought process or behaviour. There was no previous family or personal psychiatric history. A letter from him dated November, 1945, stated that his only complaints were occasional headache and a mild "startle" reaction. No Rorschach test was performed on this man; but apart from his brief psychotic episode, there was no evidence of paranoid or schizoid trends. In fact, his personality would appear to have been more extroverted than introverted, with a somewhat low threshold for stress.

Comment.

It is the impression of some that one should be on guard against an undue focusing of attention on the diagnosis as such. For prognosis certainly a clear-cut label would be of considerable help; but is not our conception and acceptance of the cycloid, the hysteroid, the schizoid and other personalities a little too rigid, complacent and final?

SUMMARY.

1. A survey of the psychiatric casualties from the Borneo campaign has been presented. Some features are stressed. The high incidence of psychoses is noted. The schizoid states are discussed.
2. Mention is made of some aspects of military psychiatry in the Australian Military Forces, with particular reference to work in forward areas.
3. Attention is drawn to urgent rehabilitation and repatriation obligations.
4. A question is raised concerning diagnostic pigeon-holing in psychiatry.

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DETACHMENT OF THE RETINA.

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DETACHMENT of the retina—that is, separation from the chorioid—may occur in the following ways: (i) by the retina's being pulled up from within—for example, as a sequel of plastic cyclitis; (ii) by the retina's being pushed up from without—for example, chorioidal hæmorrhage following trauma or vascular disease. Parsons states that clinically detachment of the retina is observed most commonly in three conditions, (i) after a blow, (ii) in high myopia (60% of cases) and (iii) in sarcoma of the

chorioid, and adds others to which no cause can be assigned.

The exact mechanism is not understood, but detachment of the retina is most common in men aged between forty-five and sixty-five years.

The condition has been recognized for a long time, but until recently treatment was unavailing. It was previously considered that the vitreous shrank away and allowed the retina to fall forward, and such operations as that of Müller were devised to deal with it, with little or no success, and the outlook was practically hopeless; the condition ended with complete detachment, secondary cataract and low-grade cyclitis. In the 1920's and early 1930's you have seen it occur all too frequently. However, since Gonin's work, commencing many years before, but being tried clinically in 1923, much improvement in the outlook has been obtained.

I do not intend to give a full discourse on the subject, but to point out a few of the factors involved and give an outline of what I consider the most satisfactory operative technique.

When the precise pathology of the condition is understood, perhaps even better results will be obtained than we get now. Parsons gives the following figures at present. The results are good in 30% of cases due to trauma, with retinal dialysis at the *ora serrata* in the lower temporal quadrant. In otherwise healthy eyes with retinal holes the prognosis is good in 60% of cases if operation is undertaken early. The prognosis is bad if the detachment has been present for more than nine months, or when the vitreous, retina and chorioid are degenerated, as well as in the presence of high myopia and always in restless and neurotic patients.

Lowenstein, in *The British Journal of Ophthalmology*, suggests that posterior scleritis, which is practically symptomless, leads to exudate under the chorioid and rupture if the retina is weak, particularly when Ivanoff-Blessig cysts are present, more especially in old people and near the *ora serrata*. He also states that the conditions for the occurrence of an exudative retinal detachment are present when (i) an angiospastic reaction in the sclera or chorioid causes exudate, (ii) the exudate finds its way between the chorioid and the retina, (iii) there are no widespread adhesions between the chorioid and the retina, (iv) intraocular pressure is not high enough to press the retina onto the chorioid.

A progressive retinal separation occurs when a tearable spot is present in a senile or myopically degenerate retina. One can accept this hypothesis or not according to individual judgement. However, the outstanding feature in the modern conception of the disease is that there is always a tear or a hole in the retina, and that the retina is raised from the chorioid by a highly albuminous fluid supposedly secreted by the chorioid. This is called the subretinal fluid and has to be removed at operation. Holes in the retina are largely of three types: (i) Horseshoe or arrow-head in shape, with a lid-like tongue; these are always peripheral, and commonest in the upper parts of the retina; they are attributed to traction by vitreous bands. (ii) Round holes, usually less peripheral, which may occur at the macula. (iii) Disinsertion or anterior dialysis; this is often traumatic, but may be congenital or idiopathic. (I saw a boy, aged fourteen years, with both eyes affected; a large disinsertion was successfully treated by operation.)

Pre-Operative Investigation.

The pre-operative investigation of the eye is most important and essential to successful results. The hole must be found, and it is often a tedious business. As one ophthalmologist remarked: "There is only one thing worse than looking for a hole, and that is watching someone else look for it." The hole may be in the upper part of the retina and the detachment may be inferiorly situated, but the operation is still aimed at sealing the hole and the subretinal fluid is evacuated below.

A full dilatation of the pupil is essential, and Amsler often uses a 3% solution of atropine as an instillation, or "Mydracaine" may be injected near the limbus, usually in

the lower part of the globe. The eye should be examined with a plane mirror at reading distance first, and any differences in reflex noted and drawn on a chart representing the four quadrants of the pupil. This will obviate the overlooking of shallow areas of detachment.

Indirect and direct ophthalmoscopy are then employed. There is no need for me to describe here the appearance of a detachment, as everyone is familiar with it. However, the hole is recognized usually by its glistening white edge, but mainly by the red reflex of the chorioid, which is seen shining through the greyish-white foreground of the detached retina. The impression of looking into a deep cave is gathered when one is looking at a disinsertion. A careful drawing of the fundus is made, showing areas of detachment, degeneration and hole or holes. There may be more than one hole, and all must be closed for successful results; also it is advisable to barrage any degenerative area that looks like forming a possible tear. A record of the vision and the fields of vision are also taken, possibly on several occasions, and the patient is examined in several positions and especially in that similar to the position during operation, lying on the table, as the detachment may look quite different viewed from a different angle. If a large ballooning detachment is present and no hole can be found beforehand, it may often be demonstrated at operation by first making one or two diathermy punctures and allowing some of the retinal fluid to escape, thereby causing the retina to become flattened and so rendering the tear visible.

Previous methods of estimating the position of the hole by disk diameters, gold studs *et cetera* have not proved satisfactory. The method devised by Professor Amsler, of Lausanne, the successor of Gonin, gives more satisfactory results. He uses a completely black operating theatre, with assistants gowned in black, and black towels as drapings. A high voltage light and indirect ophthalmoscopy are then used.

My method is a variation of this technique, and I shall describe it subsequently. Professor Vogt, of Zurich, made use of electrolysis in treating detachments, and it is perhaps of value in holes about the macula, as less damage is done to the retina than by barrage. Electrolysis may also be used as a method of localization, as a bubble of gas is given off at the point of the needle and stays in the vitreous. The method of multiple trephinings and chemical irritation for production of exudate (Quist and Lindner, of Vienna) has, I think, largely been discarded, as the eye becomes too soft and too much damage is done to the sclera. Multiple perforations as in the Safar method also have the disadvantage of making the eye become soft during operation.

Lister (1924) holds that the presence of a hole excludes a growth. Pathological and clinical investigations have failed to reveal a hole when the detachment was due to a tumour. In the army we are dealing with a younger age group, and the possibility of a tumour has always to be borne in mind; but the finding of a hole excludes it almost certainly. Transillumination of all detachments should always be practised.

I shall now present a short account of the technique we adopt and demonstrate details of a few recent cases.

An Operative Technique.

The procedures recommended for the treatment of detachment of the retina have been legion, but it was not until the work of Jules Gonin that a method giving reasonable hope of success was described. Briefly, Gonin sought to cure the detachment by sealing the hole or tear in the retina by means of an adhesive chorioido-retinitis, caused by some irritant agent—in his case the actual cautery. It was Gonin's realization of this essential fact—that the relief of the detachment could be effected only if a water-tight adhesion between the retina and chorioid was formed, delimiting the area of the tear—which has been the foundation upon which all subsequent procedures have been built. The primary consideration in any successful operation is thus the accurate localization of the retinal hole. It is, above all else, to the inaccuracies in localization and

to small mathematical errors in the projection of the hole when it is localized onto the scleral surface that disappointing results of operations can be ascribed.

Especially important is the method of the projection of the retinal hole onto the scleral surface. This localization and projection are achieved simply by the method of transillumination, and depend on the fact that when the conjunctiva has been reflected the spot of light focusing any point on the retina (whether associated with a tear or not) is visible as a luminous point on the subjacent sclera. By this means, while the operator is focusing any point on the retina, the assistant can mark with Indian ink the position on the sclera, which is the projection of the spot.

The ophthalmoscope used needs to give a sufficiently intense and localized beam of light to transilluminate one small spot of the retina at a time. For this purpose I find Hamblin's six-volt, direct electric ophthalmoscope admirable. This instrument is fitted with a diaphragm giving a pin-point beam of light, so that one is able to concentrate on a small portion of the fundus at a time.

Anæsthesia.

As an unobstructed view of the fundus throughout the whole course of the operation is essential, some anæsthetic agent which does not cause desiccation of the cornea is necessary; for this I find a 5% solution of "Methycaine" (Lilley) with a few drops of adrenaline very effective. A retrobulbar injection of two millilitres of a 2% solution of "Novocain" with adrenaline (1 in 50,000) is also given. This procedure does not impair the transparency of the cornea as does the instillation of cocaine drops. Pre-operative sedation with morphine and hyoscine is also used.

Exposure of the Site of Operation.

Except in the case of small holes in the region of the *ora serrata*, canthotomy is performed to give adequate exposure. The conjunctiva and conjunctival tissues are incised about five millimetres from the limbus and dissected back towards the equator to expose the sclera. It is advisable, whenever possible, to avoid the division of any of the recti muscles, as these can usually be held out of the way by the suitably insulated squint hooks and serve as useful retractors for bringing the globe forward. Occasionally, as in the case of a hole far back, it may be necessary to divide muscles; but we should be careful to resuture them accurately or a troublesome diplopia may result.

A mark with Indian ink is then made on the sclera in the approximate meridian of the tear, at a distance of 8-8 millimetres from the limbus. This gives the projection of the *ora serrata*, and all applications of the diathermy current must be made behind this point (usually the distance is 10 millimetres, to be safe).

The surgeon then examines the fundus and focuses with the six-volt ophthalmoscope the upper limit of the tear, whilst the assistant marks its projection on the sclera. The lower limit is then marked, and in this way the projection of the whole tear is marked on the sclera. It may be noted in passing that pressure of the marker on the sclera can be observed on the retina, so that the surgeon can also tell whether the scleral markings are being accurately made. The marks are made where the point of light from the ophthalmoscope illuminates the sclera.

Diathermy.

A barrage of surface diathermy points with the Larsson electrode is then made on the sclera surrounding the marked area. The strength of the current varies with individual cases, but I find that to give the typical parchment-like appearance of the sclera a current of 75 milliamperes for five seconds is about the average.

After the surface barrage has been made the fundus is again examined and one can see surrounding the tear a number of small, round, greyish-yellow areas of reaction in the retina and choroid. To avoid sparking one should be careful to have the electrode pressed firmly against the sclera before switching on the current, and to switch it

off before removing the electrode. By inspecting the fundus after every few applications of the current one is able to control accurately both the area to be treated and the number of applications to be made. Two or three diathermy perforations are then made in the same area with a 1.5-millimetre Safar electrode, to assist in making a more firm union, and in order to let out the subretinal fluid. The average current required for these perforations is 45 milliamperes for five seconds. In making these the current is switched on before the electrode is brought up to the sclera, and is kept on until after it has been withdrawn.

The subretinal fluid usually begins to flow immediately the Safar perforating electrode has been withdrawn; but further perforation may be necessary in order to obtain a more rapid flow. If it is desired, the flow can be assisted by gentle suction with a pipette over the perforations.

The fundus is again examined to see if the flattening of the retina, caused by the withdrawal of the subretinal fluid, has exposed any holes previously hidden under folds in the detachment and, if so, these are similarly attacked.

The perforating diathermy points show up in the retina as round, greyish-yellow areas, and it is advisable to have these as close as possible to the tear.

After the diathermy perforations have been made, the conjunctiva is sutured, atropine is instilled and both eyes are bandaged for about two weeks.

After-treatment consists of the instillation of atropine into both eyes, which are tied up for two weeks; the patient is kept at rest in bed for three weeks. Lochbrille glasses are used for a further two weeks. The patient is nursed as far as possible with the head in such a position that gravity tends to keep the detached retina in apposition with the choroid and sclera.

Case Reports.

Staff Sergeant H. gave the history that his vision was normal until he was accidentally struck in the right eye whilst practising unarmed combat in New Guinea about six months previously. He was in a casualty clearing station for one week, then in a convalescent depot, where he noticed a faint shadow coming in his right nasal field, which he reported; this, however, was put down to blurring from atropine drops. The shadow gradually grew worse. The visual acuity of his right eye was reduced to perception of light. Vision of the left eye was $\frac{1}{2}$, normal. Examination of the visual fields then revealed the nasal deficiency—a lateral retinal detachment. The disinsertion was from the 10 o'clock to the 7 o'clock position.

The eye was kept under atropine treatment for two weeks. The fields improved, and the detachment had a better defined edge medially; the disinsertion was still extensive. The visual acuity in the right eye improved to $\frac{1}{200}$.

At operation, under local anaesthesia with "Methycaine" and a retrobulbar injection of "Novocain", diathermy was applied to the detached retina. Six days afterwards the blur was gone. In eight days vision was good, but the retina appeared still to be detached laterally. One month later the visual field was nearly full; examination with a Bjerrum screen revealed the field to be full. The visual acuity in the right eye, with correction by means of a 1.00 diopter cylindrical lens on an axis of 90° , was $\frac{1}{2}$ partly. The edge of the retina was still visible round the tear area, but the rest of the retina appeared to be quite flat and attached. Barrage points were visible medial to the free edge of the retina and in the choroid and lateral to it. The flap of the retina was walled off on each side, and the rest of the retina was flat. The appearances were those present in spontaneous cure. Two months later the visual acuity of the eye, with correction by a 0.75 diopter cylindrical lens on an axis of 85° , was $\frac{1}{2}$ almost. Three weeks later the patient was discharged from hospital to general duties, and medically boarded as class "B".

Private J. gave the history that his eye had been sore and inflamed for two years; vision was bad and everything was blurred. He was found to have an extensive inferior detachment of the right retina. No definite hole was detected. There was no history of accident or of a blow on the right eye. Conjunctivitis was present in both eyes. Later the patient remembered an old fracture of the right maxilla, sustained when he was kicked by a horse.

On June 30, 1944, the patient was admitted to a military hospital. The visual acuity of his right eye was approxi-

mately $\frac{1}{60}$. The right retina was detached, and a large area of ballooning was present near the *ora serrata* inferiorly; no hole was visible. Operation was undertaken. In the absence of a hole, barrage with diathermy was carried out and then puncture with a single needle. A small hole was seen after the escape of subretinal fluid in the 7 o'clock meridian. Further barrage was given to this area and several more punctures were made about the margin of the hole. One month afterwards the visual acuity of the right eye was $\frac{1}{6}$ partly with 0.25 diopter correction on an axis of 90° . The field was nearly full. One week later the visual acuity of the right eye was $\frac{1}{6}$ partly with a 0.25 diopter concave lens and a +0.25 diopter cylinder with its axis at 90° . The retina appeared reattached. The diathermy effect was visible on the lower part of the retina. Three months later the vision in the right eye was $\frac{1}{6}$ with a 0.25 diopter concave lens and a -0.25 cylinder. The patient was discharged from the hospital and regraded in class "B".

Lance-Bombardier S. gave a history of having noticed blurred vision in his right eye for eight weeks. On examination of the patient, a shallow detachment of the retina was found involving the lower half of the retina including the macula. Some vitreous opacities were visible below. The disinsertion extended from the 6 o'clock to the 7 o'clock position; the lower half was a shallow detachment. The macula was detached. The visual acuity of the right eye was the perception of fingers at four feet; that of the left eye was $\frac{1}{6}$.

The patient was admitted to a military hospital on June 24, 1944. The visual acuity of the right eye was $\frac{1}{60}$ and that of the left eye was $\frac{1}{6}$. More than half the field was lost, including the macula. Operation was performed by the usual method. Ten days after operation, on a rough test the visual field appeared full. There was a large white area of retina around the tear, and a small hemorrhage in part of the retina obscuring details. A week later some black pigmentation showed at the edge of the barrage area; the rest of the retina looked flat. Three weeks later the visual acuity of the right eye was $\frac{1}{30}$, and the field was full. One month after operation the visual acuity of the right eye was $\frac{1}{12}$ partly with correction. Examination with a Bjerrum's screen gave normal results. Three months after operation the visual acuity was $\frac{1}{12}$ partly, and the field was full.

Sergeant J. gave a history of blurred vision in his left eye and of sensitivity to glare. He had been examined two years earlier, but glasses were not supplied owing to the unit's moving. On examination, he was found to have a large retinal detachment in the left eye. The visual acuity of the right eye was $\frac{1}{6}$ and of the left eye $\frac{1}{12}$.

He was admitted to a military hospital on September 22, 1944. The left retina was detached and the visual acuity of the left eye was $\frac{1}{12}$. Two months later the detachment was more easily seen, and the vitreous was clearer. The visual acuity of the right eye was $\frac{1}{6}$ and of the left eye $\frac{1}{12}$ partly. The disinsertion appeared to be in about the 6 o'clock position, possibly in two sections; the position was not definite. Operation was carried out by the usual method. One month after operation vision of the left eye was $\frac{1}{6}$ with a +1.5 diopter spherical lens and a stenopeic slit at 180° . The detachment looked well walled off, but a small area still seemed to be detached laterally. Six weeks after operation vision of the left eye was $\frac{1}{6}$ with a +1.0 diopter spherical lens and a +0.25 cylinder with its axis at 90° . A small detachment downwards and outwards was still present. The perimeter appeared nearly full. Examination with a Bjerrum's screen revealed a relative scotoma above the macula in the upper part of the field.

Sergeant G. gave a history of being struck under the right eye by a coconut. Two weeks later visual disturbances were noted. The right visual fields were blurred and diminished, mainly temporally and nasally. Visual acuity of the right eye was reduced to the perception of hand movements only; that of the left eye was $\frac{1}{6}$. An extensive inferior detachment was present. A hole was present in the detached area about one disk diameter just proximal to the *ora serrata* at the 8 o'clock position. One very large tear was present, and there was a small hole medial to it. The previous opinion was that the prospects of a successful result were slender in view of the size of the tear.

The patient was admitted to a military hospital on October 16, 1944. Perception of light was fair. The vitreous was rather hazy. He was transferred to another military hospital on December 6. Diathermy was applied to the detached retina, and operation by the usual method was undertaken on December 8. One month later the field was

full, and examination with a Bjerrum's screen gave normal results. Vision of the right eye with a +0.5 spherical lens and a stenopeic slit at 180° was $\frac{1}{30}$ (one letter).

This patient is still in hospital as this paper is being written and his condition is improving.

Private M. had perception of light only in his left eye, which had been affected for four or five years; he had had an intraocular foreign body removed by the posterior route in 1937. The visual acuity of the right eye was $\frac{1}{6}$. A large, ballooning detachment behind the lens was visible to the naked eye; no tear was visible, but a disinsertion was suspected. At operation barrage and puncture were performed, and a disinsertion was found after the escape of subretinal fluid. The operation was carried out accordingly. The result was a fairly good though contracted visual field. Examination with a Bjerrum's screen revealed a defect in the upper part. Vision of the left eye with a +5.0 diopter spherical lens was $\frac{1}{24}$; that of the right eye was $\frac{1}{6}$ with no correction.

The left eye was probably always partially amblyopic.

Private T. noticed that the sight of his left eye failed when he was in Syria, but he had no attention. On his return to Australia he was boarded as class "B" and advised that nothing could be done. The visual acuity of his right eye was $\frac{1}{6}$, and that of his left eye was reduced to perception of light. A detachment of the retina was present inferiorly, with disinsertion at the 5 o'clock position. At operation diathermy was applied by the usual method. One month later the visual field was full; the visual acuity of the left eye was $\frac{1}{30}$. Two months later the field was full and examination with a Bjerrum's screen gave normal results. The visual acuity of the right eye was $\frac{1}{6}$, and that of the left eye with a +0.75 diopter lens was $\frac{1}{12}$. The left retina was fully attached.

Private S. bumped his left eye on the back of a motor bicycle. A vitreous hemorrhage occurred, and the patient was unable to perceive light with the eye. One month later the vitreous was clearer and a detachment of the retina was visible. Three months later the vitreous was clear, the patient could perceive light, and a disinsertion was visible inferiorly between the 7 o'clock and 5 o'clock positions. Diathermy was applied and operation was performed. Two months later the field was full; a Bjerrum's screen examination gave normal results, and the retina was fully attached. Visual acuity in the left eye was $\frac{1}{6}$ partly.

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PSYCHOLOGY AND SOME APPLICATIONS.¹

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PSYCHOLOGY has been variously described, and in clarifying it to you I would do so for myself, so I shall endeavour to give a brief survey.

Psychology has been called the study of the behaviour of man and living organisms. It has an historical side and is not a modern science. As early as the days of Plato and Aristotle it was associated with philosophy (that is, the study of mental and moral science or of ultimate meanings), but through the ages it has become divorced from philosophy and has become a science of its own. In the seventeenth century Galileo revolutionized physics by showing that perhaps all physical processes could be described in terms of motion and inertia, Harvey discovered the circulation of the blood, and physiological reasoning was given for physical processes. Then Descartes applied physics to animal and human behaviour and located the soul in the brain. Hobbes went further and said that external motions striking the sense organs were then communicated to the brain, nerves and heart, and that internal motions, once started, persisted by inertia in the form of memory and ideas. This became the

¹ Read at a meeting of the Royal Australasian College of Physicians at Hobart, March, 1946.

famous association psychology which persisted through the eighteenth and nineteenth centuries. The associationists reduced all mental processes to association and so explained many fears and antipathies of childhood and reduced action belief—invention—reasoning to one process of association. Early in the nineteenth century came chemistry achievements, but more important was physiology, and out of the physiological laboratory grew the psychological laboratory, founded first of all by Wundt in 1879, which led to experimental psychology; biology and evolution became famous through Darwin and Galton and brought psychology into contact with zoology and anthropology. In 1890 psychology was independently established in universities, but psychologists were often philosophers. Psychology was now the study of consciousness, the individual was the experimenter and introspection (that is, subjective observation) was the method of study.

The question might be: (a) How quickly could he react? (b) How accurately could he perceive? (c) How completely could he recall? And in the study of emotion and feeling recordings were registered on an apparatus.

The Schools of Psychology.

Then came the twentieth century with its various schools, and they were all in revolt against consciousness and introspection (subjective observation) as the best way to study psychology, and each of them stresses a particular viewpoint. (i) The existentialists stressed refined sensory analysis, that is, subjective study. (ii) The behaviourists stressed motor performance, that is, objective study. (iii) The *Gestalt* school stressed perception. (iv) The psycho-analytical school stressed the unconscious mind. (v) The *hormic* or *purposivists* stressed instincts and goal-seeking in behaviour.

The First School.

Existentialists emerged from the associationists and tried to find a more precise and refined introspection. Introspection, that is, subjective observation or the study of one's own behaviour, was made through the sense organs by the so-called "method of impression".

The Second School.

The behaviourists were another school associated with J. B. Watson, and their method of study was altogether different. It was the study of the behaviour of others, that is, objective study or the study of performance. As early as 1900 Cattell had become interested in object or performance psychology, and also later on Thorndike came with his experiments on animal instinct and also on animal learning which he considered was by trial and error. At about the same time in 1905 experiments were being done in Russia by Pavlov, and he established the conditioned reflex which happens when a "response becomes attached to some substitute for the natural stimulus" and substitutes may be natural or unnatural.

A natural substitute occurs as with a dog salivating when he hears his master's footsteps before the food is seen. An unnatural substitute occurs with the swans at Wells Cathedral in England which ring a bell for their food. J. B. Watson became very impressed with the conditioned reflex, which he considered was the key to habit formation and to integration of simple movements into complex learning acts. He applied it to all behaviour explicit or motor and implicit or sensory, for he said that implicit behaviour included thinking, emotion, sensation and perception.

The Third School.

The *Gestalt* school arose in Germany at about the same time as the behaviourists, that is, early in this century, and made the point that a shape, form or configuration possessed a property in the whole which was not possessed by any part composing the whole, and proceeded to give examples.

As a melody has a form quality of its own, one can transpose it from one key to another and so change the element, but not the whole, so the melody keeps its form

quality or tune. The same may be applied to a pattern of dots or to facial expressions, in which the expression of a part may be changed when the rest of the face is changed without any objective change in that particular part. This theory was then applied to the behaviour of human organisms.

Experiments in sense perception further show that in a cinema one is forced to see successive still pictures as a moving process by one's brain; movements in the successive pictures are not actually seen, but sensed, and one is forced by one's organization to see motion as a continuous whole. The *Gestalt* view is that the total brain process controls the separate items of stimulation. Unbalanced, unfinished or imperfect figures mean unbalanced mental tensions. The *Gestalt* view is also that an infant starts with behaviour of a crudely organized sort and his sensory and motor adjustments to the environment are embedded in the total activity of the organism. "The study of sense perception was the best approach to behaviour and the study of the environment was equally important" was the *Gestalt* theory. Kohler did some interesting studies on apes in regard to intelligence which he considered was the ability to see over the whole situation or problem, and so to solve it. This he called learning by insight, which was possessed by only a few apes, as distinct from learning by trial and error, which was described by Thorndike in his study of animals in behaviourism. The *Gestalt* view is that the brain works in large patterns and by "closing gaps" in behaviour.

The Fourth School.

The psycho-analytical school stresses the unconscious mind and commenced as early as 1780 with Mesmer; later in 1825 came Charcot, and in the middle of the nineteenth century came Janet and Morton Prince, and lastly in 1900 came Sigmund Freud. He expounded the theory of the importance of repressed infantile sexuality, and by using "free association" and "transference" allowed the patient by mental catharsis (as it was called) to talk out his difficulties and so to relieve his complexes at a conscious level. He pushed analysis back to early childhood and revived infantile emotional attitudes. Dreams were interpreted by means of symbols. He believed in motivation of all conduct and that all acts voluntary or accidental are wish fulfilling. He stated that the unconscious is what has been repressed, he used the term sexuality in a broad sense meaning love, and he originated the term "Oedipus complex". Freud believed that we develop sexually; first there is the oral stage at one to two years, secondly comes the anal stage at two to three years, and thirdly the genital stage at the age of five years. At five years of age we are supposed to get over our Oedipus complex, that is, the finding of a love object in a parent, and so to emerge normally at adolescence. But if we do not, and further if we develop a neurosis, we regress to childish levels of behaviour and to preoccupation with our childish interests. To Freud a neurosis in a patient is an awkward attempt to reach some adjustment between his own desires and conditions of life. Alfred Adler and C. G. Jung, of Zürich, were important disciples who later broke away. Adler in 1912 stressed the inferiority complex. He said that in all of us there is a fundamental wish for power, and that if we consciously or unconsciously feel reason for inferiority the result will be the same—we shall feel that we must compensate for this inferiority by showing superiority in either pathological self-assertion or rudeness. He thinks that we are born into a certain situation; thus a child of very successful parents may be handicapped by a feeling of hopelessness of attainment and adopt a line in life which calls for no effort, and so his social attitude will be prototype to other situations. He suggests that by analysis the patient may be shown his inferiority complex and thereby relieved of the necessity for over-compensation. Jung developed the theory of human types, the extrovert and introvert, and stressed also the racial unconscious which is supposed to exist in all of us from our primordial fathers. By the study of mythology a light is thrown on the collective or racial unconscious.

The Fifth School.

The hormic school or study of purposivism was commenced by William McDougall, of England, in 1908, and stressed the importance of seeking in behaviour. In purpose we foresee the outcome of a certain action and we feel desire for that outcome. Social problems were attacked by him: (i) Did men live in groups through fear or through calculation of good to greatest numbers? (ii) Was religion the working out of a religious instinct? (iii) Is conscience a native faculty for distinguishing right from wrong? He stressed instincts and proceeded to enumerate about eighteen of them, and considered that emotion was associated with and was the core of every instinct and gave it its continuity. An instinct such as that of combat or fight has the emotion of fear associated with it. He said that the major instincts provided all that was necessary for family and social grouping. Instincts are not acquired, but are the original springs of action with which man is born, and sentiments are merely combined instincts. The sentiment of patriotism is a combination of instincts of pride, fear, love and self-assertion, and so on; and also the self-regarding sentiment which we develop towards ourselves is a mixture of self-assertion and self-submission. According to McDougall all behaviour is built up from sentiments.

The Application of Psychology.

These are the so-called five contemporary schools.

Quite apart from these five schools of psychology there are a great number of eminent psychologists who do not belong to any school and are more interested in other branches of the subject and have founded no schools. The importance of the various schools, however, is that they stress a particular viewpoint. Psychology has been defined also as the study of the individual—or of behaviour which is external or internal or of mental life; and mental life includes attitudes, beliefs, memory, emotion, thoughts, impulses or imaginings. Psychology also teaches us to know ourselves, others, the human race, abnormal persons and animals, and by understanding them to get along with them. It gives us a conception of the importance of the social side of our nature. We realize how we feel loneliness when separated from our fellows, and how we defend the group to which we belong and tend to conform to the same dress, conventions, habits and moral code. This gives us an idea as to how society is kept together—a further means being by displacement of "internal dissatisfactions" such as having a common enemy so as further to instil nationalistic feelings. The persecution of the Jews in Nazi Germany was an example. We see the reverse effects at present now that the war is over, and, a common task not cementing us, internal dissatisfaction is manifesting itself and industrial unrest is becoming widespread.

From our home life we know how important to a child is the training it receives from the mother and father, and it is from them that the child receives the prohibition of society. The easy emotional suggestibility of a crowd is well known, and so is the importance of the personality of the speaker, and more especially if the interests gathering the crowd together are of an intellectual nature. We are further made aware that we cannot put down to economic conditions the evils of nationalism, and that if we really did love our neighbour more than his property, we would be as one with him; but as long as the wish for gain and hatred remain in us, treaties will be useless, as these instincts are satisfied only by action, that is, war.

With the consideration of our emotions and their causes we acquire the ability to control them to varying degrees. If we wish to put more than a usual control over them, (a) we pit one emotion against another, and here social pressure becomes important, as we always wish to appear to our fellows in the best possible light; (b) we can intellectualize the situation and so remove emotion; (c) we can turn our attention to something else.

In eastern countries a degree of remarkable control of emotion and detachment is attained by practice, and Yoga

followers have the ability to control their autonomic nervous system with their respiratory and blood supply so that they can be burned or cut without the usual physiological changes taking place, and fire-walking is said to be a further example. Also from the east comes the practice of concentration of attention as regards a particular content or trait that we wish to acquire, and it is said that we are rewarded by far-reaching changes in our personality by such practices. In our western civilization with material standards such contemplative exercises are practically limited to religious orders (as monks or nuns).

Memory, which is the action of past experience on the present, is often the basis of the habits we form in life.

Experimentally it has been found that meaningful material is more easily learnt than meaningless—as also with material which is preferred. A certain amount of time spent on recitation of passages causes more impression and has good results; but for success in learning the will or intention to learn must be present.

We can further improve our memory by (a) linking material up with a maximum amount of interest and so making it more accessible, (b) elaborating the relations between the items to make it more orderly, (c) making the material spontaneously interesting and arousing deep-seated interests. All these are important from an educational point of view.

When we turn to our beliefs we find that they are dependent on specific and general factors. Concerning the specific factors, we find in a certain case that we believe as we wish to believe, or we believe because the person who is telling us is important, or because what he tells us fits in with what we already believe. General factors are the result of experience and inference. Economic factors are evident in influencing them. For example, the employer will believe one way, and his desire to keep his ascendent position will further influence him; this, of course, he will deny, as his attitude is no doubt unconscious, showing that at times we are not the best judge of our own motives. The employee who is being exploited, on the other hand, will believe another way until he in his turn seizes power which will cause him to change his beliefs, as he in his turn will be loath to relinquish power. So we see a continuous change of beliefs depending on who is in power and exploiting or who is being exploited; any belief current in one party will be rejected by the other. This we can well apply to political circles.

Concerning the relation between body and mind, let us consider first of all changes in the body affecting the mind.

1. We see how the sense organs convey impressions to the mind so that without sense organs we would have no impressions to relate.

2. An injury to the brain or central nervous system affects the mind, so localization of the various centres is established. The work by Hughlings Jackson and Head on aphasia established the speech areas.

3. With the endocrines we also notice variation of mentality according to the "sub" or "hyper" types.

4. Drugs, by affecting the body, also cause changes in the mind, as with alcohol and particularly morphine addiction, in which states of mental tension recur which demand for their release the drug to which the body has become accustomed.

Cases of the mind affecting the body are also important. The usual one is the decision to perform an act, but we see this in a pathological form in conversion hysteria and hysterical paralysis.

We realize when we come to psychometry, that is, the study of types, that people vary in their reactions, although their aims may be the same. Kretschmer has defined two types which he calls the schizothyme and the cyclothyme. The schizothyme is the ambitious, distant, formal unchanging idealistic type, while the cyclothyme in distinction is a realist and practical, warm-hearted, frank and enjoying life. Jung divides his type into two also, the extroverts and introverts. The introvert is like the cyclothyme and is fond of acting, theatricals and sport,

while the introvert turns more naturally to philosophy and science.

Even in crime the two types remain fundamentally different, the extrovert being given to impulsive crimes of violence and injury, while the introvert turns to fraud and long-planned deceit. Suicide is now common amongst introverts and also divorce, for though extroverts more readily quarrel they are also quicker to come together again. The physical characteristics of both types are different; the schizothyme has an athletic or an asthenic build, while the cyclothyme is plump and rounded, the so-called pyknic physique.

Another classification is into the surgent type (extrovert) and the desurgent (introvert).

Kretschmer has used the Rorschach test for distinguishing between the types. This is done by symmetrical ink blots coloured and uncoloured which are shown to the patient, and he is asked to record his own interpretation of them. They merely act as a stimulus for free association. His answers as regards associations—form and colour—are recorded and interpreted only by a trained psychotherapist. It is found that the schizothyme gives more phantasy and association, while the cyclothyme gives more objects and scenery.

When we turn to intelligence testing, we must first of all define intelligence. It is said to be the capacity to profit by experience, or, as Professor Spearman has defined it, as "G", that is, the ability to grasp complex relationship or to see a problem, while Burt states that it is the inborn all-round mental efficiency. "G" remains constant during all intelligence testing for an individual, as it is largely a general ability. Spearman also mentions another group of factors that he calls "S", which is variable, as it is a measure of the factors playing a part in ability in the response to any given special test. Intelligence testing is widely used in many fields in sociology, criminology, and particularly education. It was first commenced by Binet in 1905 and won recognition. At the same time Terman in America invented and developed group testing and applied it during the first world war to test the mental ages of millions of American recruits.

It is said that intelligence develops up to the age of sixteen years in normal persons, and that after that we develop by experience. Intelligence is inherited and is of a higher standard among children coming from better class homes than from poorer ones. Tests for "S", that is, special aptitudes which include temperamental traits, are made, and artistic ability, wit, dexterity, musical aptitudes, drawing (found to be largely inborn), spatial sense and aesthetic discrimination are all tested and combined into a psychograph.

These tests are of great value in vocational guidance. Charles Myer, a Cambridge scientist, has applied psychology to industry and founded the National Institute of Industrial Psychology in 1912 in England. This endeavours to put a man in his right sphere; it is found that men psychologically tested and put into jobs are more suitable than those selected at random.

For the detection of psychoneurotic traits we can use tests for probing character and for character integrations. These tests are supposed to reveal behaviour traits unsuspected as a result of any other tests such as that of perseverance, which is a measure of the ability to be able to switch one's thoughts and actions from one matter to something else. As an example there are times when one cannot get a tune out of one's head, or an idea out of one's mind. High and low perservations are said to be unreliable and difficult and to reveal psychoneurotic traits.

In obsessional cases spot dotting tests are used, and these with Jung's association tests are used in problem cases, when scholastic difficulties arise, and for vocational guidance.

In conclusion, we find that in all fields of behaviour or human activity we can apply psychological principles. These may be applied to the understanding of human nature; they serve to help man in his adjustment to life and are useful when he has to be placed in his correct sphere.

PSYCHOLOGY IN THE AUSTRALIAN ARMY.

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THE Second World War has been a war of specialists. Relatively few men have clashed hand-to-hand in combat. Many more have actually fought as specialists, or have been employed as specialists in the support or maintenance of these few. Further from the dangers and glories, less spectacular than the soldiers who fought the war or the physicists who finished it, have been great numbers of specialists whose work has been almost unnoticed. The object of this paper is to tell, in outline, of the contribution of one small group—the Australian Army Psychology Service.

HISTORICAL ASPECTS.

Before 1939.

The story of the application of organized psychological knowledge and training to the purposes of war begins about 1917, when the Germans developed psychological techniques for the selection of motor transport drivers, and the Americans used in the examination of all recruits the now well known army alpha and beta group intelligence tests, quickly developed for the purpose. In England no use was made of selection techniques during the First World War, but a propaganda organization was developed which played a material part in wearing down German resistance.

In the period between wars there were great developments in the educational, vocational, industrial and other branches of psychology, but little application of the knowledge gained to military purposes. In America and Hungary experiments were carried out in the selection of motor transport drivers. In Spain during the civil war techniques were developed for the selection of scouts, guerillas and anti-tank bomb-throwers. Large sums were spent by the Japanese, but little is yet known of their work. In Germany steady advances were made from about 1921, and by 1936 some 40,000 candidates were being examined each year for the selection of officers, aircrew, wireless operators, motor transport drivers and other specialist groups.

From 1939 to 1945.

In the last war very few combatant nations did not make use of psychologists in some military capacity. Clinical, industrial and social psychologists worked with the anthropologists to develop the techniques of propaganda and psychological warfare, and to protect morale. Educational psychologists have been called upon to revise and improve training methods, and, with vocational and experimental psychologists, have been used most extensively in the development of personnel selection procedures. Towards the end of the war, when it was found that the supply of men suitable for training in the many specialized duties of an army was running out, industrial and experimental psychologists in England and America were given the tasks of reviewing organization and administration, with a view to shortening procedures, and of simplifying equipment and weapons to enable a greater proportion of the available population to be trained in their use.

SELECTION AND PLACEMENT OF PERSONNEL.

The Australian Army Psychology Service had little to do with psychological procedures other than those relating to the control of personnel. The remainder of this paper will therefore be concerned with this field of work. As the developments in personnel selection and placement in allied countries were fully exploited in the solution of Australian problems, a brief outline of these may be of interest.

England.

The British Army commenced to use psychological methods in the control of personnel in 1939, with the

selection of instrument operators for anti-aircraft units and of signals specialists. In the following year a group general intelligence test was introduced for use in training units, and men who did poorly in this test were referred for psychiatric examination. In 1941 an organized plan of personnel selection was developed, and by July, 1942, the General Service Corps scheme, which was to have an important influence on developments in Australia, was in full operation. In March of the same year boards for the selection of officer trainees had been introduced, and they have since extended their activities to disposal of unsatisfactory officers, to the selection of officers for fire brigades and police, to the selection of cadets for the diplomatic service, to the reallocation or disposal of ex-prisoner of war officers, and to other similar duties. At a later stage centres for the reclassification of "problem" personnel were formed, and army selection officers who followed the invasion into Europe were used extensively for regrouping personnel to meet changing needs, or for finding men with special characteristics or for special duties.

Canada.

A general intelligence test was issued in the Canadian Army early in 1941, units being examined on the option of their commanding officers. After a few months' trial arrangements were made for all recruits to be tested and interviewed prior to allocation to arms and duties. In 1942 officer preselection was commenced, and at a later date provision was made for personnel officers with combatant formations.

United States of America.

America had pioneered the use of psychological procedures for the control of personnel during the First World War, but between wars, except for a few isolated experiments, no developments occurred in this branch of military psychology. Early in 1940 a small personnel research section was established in the Department of the Adjutant-General, and soon afterwards educational and industrial psychologists were formed into a Committee on the Classification of Military Personnel, under the National Research Council. As a result of these two measures further preparations were made, and when the *Selective Service Act* was passed later in the same year, the army was ready, with personnel, equipment and procedures, to put the provisions of the act into operation. Unsuitable recruits were rejected, those accepted were rapidly sorted and distributed optimally between duties, and all drafts were carefully scanned for potential officers. There can be no doubt that these measures contributed in no small way to the effectiveness of American arms.

HISTORY IN AUSTRALIA.

From 1939 to 1942.

In Sydney and Perth there are university chairs of psychology, but elsewhere in Australia the teaching of this branch of knowledge has been left almost entirely to the educational psychologists in teachers' training colleges, and to the philosophers in the universities. Australia has always paid scant attention to its teachers and philosophers. It is not surprising, therefore, that before the war there was little general awareness in this country of the work of psychology in a modern community. Except in New South Wales, there had been little application of psychology to the problems of industry.

Early in the war the concentration of workers into essential industries commenced, and with it grew the need for retraining large numbers of adults. It soon became apparent that a high failure rate would place a heavy burden on technical training resources and would delay the development of the munitions programme. The educational, industrial and vocational psychologists were therefore called upon, and it was soon found that by the use of suitable selection techniques most failures in training could be avoided. The Royal Australian Air Force was quick to apply these successful procedures to the problems of aircrew selection, and later to the distribution of all recruits.

The Army.

The need for psychological procedures did not become urgent to the army until somewhat later. At first there were plenty of volunteers of good type for the Second Australian Imperial Force, and no great difficulty was experienced in their distribution and training. As early as 1940, however, many commanding officers, and especially those controlling highly technical groups such as signals or survey units, were obtaining assistance from civilian psychologists in all States. In Sydney the psychologists formed a Volunteer Emergency Psychological Service ("the VEPS") to give assistance of this nature, and to investigate the applicability of available tests and procedures to the problems of army selection.

Whilst this kind of practical assistance was being given, a number of psychologists had been making recommendations to the Government and to the army, and in May, 1941, an Advisory Committee on Psychology Testing was set up, to report to the army on the applicability of psychological procedures. This committee made further recommendations concerning the personnel, organization and procedures necessary, and advised that certain tests should be prepared.

The entry of Japan into the war was followed by an expansion of the army to many times its former size, and a substantial proportion of the force had to be mechanized. The munitions industries made heavier demands for tradesmen, and the three services had already taken the best available manpower. The rapid overwhelming of the northern approaches to Australia gave a sense of urgency to the task of enlisting, sorting, training and deploying any personnel still available. One result of all this was to hasten the moves already being taken to introduce psychological procedures into the army. Early in 1942, the late associate professor (then major), H. L. Fowler, Director of the Department of Psychology in the University of Western Australia, was appointed to Allied Land Headquarters as the first Australian army staff officer for psychological matters, and was instructed to prepare for the examination of recruits. Unfortunately, ill health compelled Dr. Fowler's retirement from the army a few months later, but he undoubtedly laid the basis upon which the psychology service was to develop. Meanwhile, the work of "the VEPS" bore fruit, an aptitude testing section being set up to examine recruits in Sydney.

In September a psychological section was formed in the Directorate of Recruiting and Mobilization at Allied Land Headquarters, and later in the same month psychology testing sections commenced operation in each of the eastern States. These first official psychology units of the Australian army drew heavily on the Sydney aptitude testing section for both personnel and experience, and upon the American army for procedures.

Work of the Psychology Testing Sections.

Further psychology testing sections were soon formed in other centres, and by March, 1943, all areas were covered except Tasmania, which was served from Victoria for a further twelve months. As well as their initial task of assisting in the control of recruits, these sections also examined men who for one reason or another were no longer required in their former duties, and were to be reallocated. In February, 1943, psychological investigations of the problem of army delinquency began, and in the following month examinations at the request of psychiatrists were commenced. By the middle of the year, when officer preselection boards were introduced, vocational guidance of repatriation subjects and of soldiers being discharged had already started, and arrangements had been made to assist with the recommendation of military or vocational training for convalescents who would have to be reallocated or discharged because of their disabilities.

The Initiation of the Australian Army Psychology Service.

In February, 1945, the work of the army psychologists was given final recognition by the official formation of the Australian Army Psychology Service in the branch of

the Adjutant-General, consisting of a Directorate of Psychology at Allied Land Headquarters, and a number of psychology units, of various sizes, in commands and lines of communication areas. The functions of the Army Psychology Service are as follows:

1. To give advice, as required, on the most effective use of personnel, considered as individuals, and having regard to the ability, make-up, background, and preference of each individual, and to the varying needs of the army. (In this context, "ability" refers to the general and special abilities or aptitudes which are the subject of psychometric measurement; "make-up" includes physique, fitness *et cetera*, and those qualities covered by such terms as personality, temperament, character; "background" includes relevant aspects of home and family environment, educational and occupational history, interests, hobbies, military training and experience, and other similar factors).

2. To give advice, as required, on the civil vocational potentialities of personnel who are to be returned to civil life.

3. To carry out such other duties of a psychological nature as may be ordered.

During the three and a half years of its official and unofficial existence, the Army Psychology Service has examined over 300,000 soldiers for all purposes. The case records are a rich source of information on the military and civil problems of personnel placement and selection.

THE CONTROL OF RECRUITS.

Planning.

A modern army at war is a complex organization consisting of a score or more of different arms and services which together contain many hundreds of different kinds of units. Each man within each unit is a specialist of greater or less degree—the "Index of Army Duties" contains over 500 different ways in which a soldier may be employed. Varying rates of wastage within each kind of employment influence the proportion of recruits to be trained for each task, and the time required for training varies from a few months for the simplest tasks to over a year for the more specialized duties. Finally the way in which each unit is to be employed will profoundly affect wastage rates. Thus the number of recruits to be trained to each task must be based, not on present wastage, but on the anticipated wastage of many months ahead; the recruit of today must be trained to step into a vacancy which will occur in six to twelve months' time. The actual distribution of recruits is determined by a staff of specialists, who are in close touch with strategic planning, and who are able to take all these factors into consideration.

Allocation.

Implementation of the decisions of this staff is entrusted to the allocation officers at recruit depots and elsewhere, who must ensure that suitable recruits are drafted in adequate numbers to each arm and duty. To assist them in their decisions, the allocation officers are themselves assisted by further group of specialists. Each recruit is examined by a medical board, which grades him as fit or unfit for service, and if he is fit, whether fit for any duty or for duties within specified limits only. Those passed as medically fit are then examined by a psychology unit, being tested in groups or individually, interviewed, and finally assessed by an army psychologist. Each man is rated as psychologically suitable or unsuitable, and if he is suitable, an assessment is made of the kinds of duties for which he is most suited. In making his recommendations, the army psychologist is aware not only of the results of psychological examination, but also of the findings of the medical board, the requirements of the allocation office, and the preference of the recruit himself.

Each recruit finally comes individually before an allocation officer, who briefly interviews him and peruses his medical and psychological reports. In the light of these, and of the recruit's preferences, the allocation officer assigns him to an arm and duty for training. If for any reason he thinks that the recruit is not suitable for service, the allocation officer may return him to civil life.

Psychological Examination.

During 1942 and 1943 it was necessary to draft recruits direct to the training units of the various arms and services, and the whole of the medical, psychological and allocation processing had to occur as rapidly as possible in reception depots. It was therefore necessary to carry out the complete psychological examination of each recruit on the day following his entry into the depot. In November, 1943, the method of handling recruits was remodelled on the British General Service Corps pattern, so that it became possible to alter psychological procedures to their present form. At reception depots recruits are now only "screened" for suitability for service, all those accepted being drafted to a general recruit training centre. Here further tests and interviews are given, and after he has completed his first few weeks of basic training each recruit is again examined by an army psychologist. He then comes before an allocation officer, who is advised by the training officer and the psychologist in respect of each case. Thus, within the broad limits of his instructions, the allocation officer is able to ensure that each recruit is assigned to a task that he likes and can do, and in which, in the current circumstances, he can make his most effective contribution to the common effort.

Rejection of Unsuitable Recruits.

The relationships between intelligence and other psychological characteristics on the one hand, and what may be termed "trainability" and "soldierability" on the other, were always understood in a general way. Early consideration was therefore given to the fixing of psychological standards for the acceptance or rejection of recruits. As, however, there was no direct evidence upon which such standards could be based, rejection was left entirely to the discretion of the allocation officers, who were advised by medical officers and army psychologists in each individual case.

Unfortunately, a persistent wastage of about 3-5% of accepted recruits was actually taking place from the recruit training centre, the men being discharged as "untrainable", and in addition large numbers of personnel who could not be moved on had accumulated in the training depots of arms and services. At the same time surveys had shown that about eight times as many mentally backward recruits were being accepted as could be absorbed into the very restricted number of duties suitable for such personnel in the army. Investigations were therefore undertaken to determine the influence of various factors on the rate of failure in training depots. As a result, instructions were issued in August, 1944, that recruits psychologically assessed as having a mental age below about eleven and a half years, or having a degree of literacy no better than that of a normal Grade III child in Victoria, would not in future be enlisted.

The results of this instruction were dramatic. The quality of recruits offering to the army remained no higher than it had been previously, but rejection of about 12% of those coming to psychology units resulted in the raising of the quality of drafts to well above the assessed civilian average, and reduced the wastage of untrainables from the previous 3-5% to less than 0-2% over many months. At the same time, the proportion of retained personnel who were subsequently found to be unsatisfactory in the later stages of training was halved.

Reallocations.

The changing fortunes of war alter the role of the army from time to time, and changes in individual soldiers alter their suitability for duties. For these reasons, a large amount of reallocation of personnel is always taking place. The principle of reallocation followed in the Australian army since early 1943 is simple; a man is posted, if possible, to a duty differing little from that which he has already been carrying out. If this cannot be done, and he has to be "converted" to another duty, he is referred to a psychology unit for assessment.

After the big expansion of the army in 1942, the psychology service assisted in the "recovery" of tradesmen to satisfy the needs of increasing mechanization.

When the danger of invasion had passed, units which had been deployed to protective tasks on the mainland of Australia were used as sources of reinforcements for the offensive force being formed and maintained in the north; again, psychology units assisted in the sorting out. For the past three years, "A" class men who had been replaced in rear units by others less fit, and those who because of wounds or illness could no longer carry out their former tasks, have formed a steady stream through the psychology units.

This constant changing of duties would at first appear to undo all the careful work put into the allocation of recruits. It is a truism, however, that a man tends to be kept doing the same kind of duties, unless he is grossly unsuitable. This was consistently found to be so in the army. Repeated checks have shown that the majority of men continue to carry out the tasks for which they were originally trained. If they have to be "converted", then they are usually sent to a duty which exploits as much as possible the training and experience they have already gained.

THE SELECTION OF OFFICERS.

In the selection of personnel suitable for training as officers, the army—and its psychologists—faced a different kind of task. Here measurement of intelligence and the special aptitudes, and appraisal of education, physique *et cetera* were not sufficient. The qualities sought here are summarized as "potential leadership"—ability, bearing, education, and above all, personality which would enable the candidate, once trained, to assume some of the leadership roles required in an army officer. The best test of leadership for battle is still the test of battle itself, but in an expanding army which has not yet been in action, officers are needed before battle is joined. Even when an army has had some fighting, the shortage of officers may be so great that a search must be made amongst the "unblooded", and every man who has a reasonable chance of succeeding in officer training must be found; a high failure rate in officer training does not matter in this case. In a diminishing army, considerations of manpower may make it necessary to ensure that the failure rate at officers' schools is kept low; in these circumstances only those most likely to pass should be selected from amongst the officer candidates offering. Finally, often good battle leaders are poor at those essential kinds of leadership needed during periods of waiting, resting or training, or in staff and administrative duties; many kinds of leader are required in an army.

The selection procedures in this field are somewhat protracted. Candidates are examined in small groups, over several days, being interviewed by psychologists and psychiatrist and combatant officers, and examined with intelligence and aptitude tests, personality pointers, and field tests designed to throw light on specific qualities. The whole procedure has already been discussed by Major John F. Williams,⁽¹⁾ who was psychiatrist with the Land Headquarters Officer Preselection Board throughout its activities.

OFFENDERS AGAINST MILITARY LAW.

The high incidence of offences against military law, particularly of absence without leave and desertion, in the Australian Military Forces was a source of grave concern, and at the time of writing of this paper the findings of the board of inquiry set up by the Commonwealth Government are still awaited. The loss of effective soldiers through illegal absence, and the accumulation of large numbers in detention, created serious military and administrative problems, and every possible means of clearing up the trouble was used. As one line of approach, a group of about fifty soldiers in detention was psychologically examined to find out if the psychologists could give any assistance. Given wide powers, the Director of Military Prisons and Detention Barracks reviewed all soldiers undergoing sentence, sending some forward to units under suspended sentence, and discharging others from the army. The psychological investigations had demonstrated the usefulness of examining such cases, and the Director of Military Prisons and Detention

Barracks called for reports on several thousand cases during the following three years. Thus the first subjects referred for psychological examination were those in regard to whom a clear decision of discharge from the army or of suspension of sentence could not otherwise be made. This group was found to consist largely of men of below-average intelligence, with bad school, occupational and family histories, and with a high incidence of civil criminal records. Most of these were discharged from the army; a few were recommended for medical examination or investigation on compassionate grounds, and others for suspension of sentence. In many cases the only recommendation possible was that the soldier should serve his sentence.

In 1944 the psychological examination of military offenders was made more effective by an instruction that as far as possible a psychological report was to be available to the reviewing authority when each case came up for routine consideration. In many instances case notes have been available to the authorities confirming sentences of courts martial, and in all cases examined copies of the psychological reports are forwarded to the Judge Advocate General.

PSYCHIATRIC CASES.

Relatively few men were examined at the request of psychiatrists or of medical boards, and in these cases the psychological report did not usually go beyond an assessment of level of intelligence. To one general hospital with large psychiatric accommodation, a psychological examiner was attached for over a year. The diagnostic value of a number of procedures was thoroughly explored, and it is hoped that information will later be forthcoming.

VOCATIONAL GUIDANCE.

The story of the activities of the Army Psychology Service in relation to vocational guidance falls into three phases, and commences early in 1943 with the examination and guidance of candidates for repatriation. This work was already in progress in some States prior to the formation of the psychology sections, and extension to the remaining States was all that was necessary. Much of this work has been carried out in hospitals and convalescent depots.

The second phase began in November, 1943, with the inauguration of the activities of army rehabilitation units. From that time, all applicants for training under the Commonwealth Reconstruction Training Scheme, and discharges who had no employment in view, were referred to the psychology units for vocational guidance. Unfortunately, because of lack of staff, only about half the candidates could receive attention.

With the end of the war the third phase commenced. Vocational guidance has, since September, 1945, been the major task of the psychology service. Special vocational guidance units were set up at discharge depots, and have examined about 40,000 subjects. The results of examinations are regarded as being the property of the soldier himself, and provision is made for the advice to be put into writing for his use in seeking employment. Applicants for training are regarded as consenting to reports being made available to the training authorities, but in all other cases no report is given to any authority without approval of the soldier concerned.

OTHER DUTIES.

From time to time the psychology service has been called upon to give incidental assistance in other matters, such as examination of persons attending courses, provision of lectures and courses of instruction, advice on the treatment of repatriates, and investigation of causes of accidents. The most useful "other duty" has been the tracing of personnel with the specific and often complex qualifications needed for various duties or tasks—cinematograph operators, cipher personnel, commercial artists for propaganda units, staff for a foreign language printing press, persons familiar with eastern languages, laboratory assistants, persons for training as meteorological officers, and so on.

PSYCHOLOGY SERVICE PERSONNEL AND PROCEDURES.

Personnel.

The work of the psychology service has been carried out by sections, consisting essentially of an army psychology officer, three or four technical assistants, and about the same number of clerical and administrative personnel. Where the volume of work has demanded it, two or more such sections are grouped together to form a psychology unit.

Officers for the Army Psychology Service were selected from university graduates who had completed a three-year course in psychology, and who since graduation had been engaged in work of a psychological nature. These were later supplemented by promotion of personnel who had undergone sufficient technical training in psychology units. The technical assistants (psychological supervisors and psychological examiners) were carefully selected on the basis of ability, personality and experience in dealing with men. It was found that school teachers, university students, lawyers and clerks provided about three-quarters of the satisfactory personnel. It was also found that the strain of month after month of testing and psychological interviewing told heavily, particularly on those members who had had no previous psychological training. The clerical and administrative personnel included clerks, stenographers, typists, records clerks, test-room assistants, marking and coding assistants and orderlies.

Procedures.

Each person undergoing psychological examination passes through some or all of the following procedures: (i) preliminary interview, (ii) mental testing, (iii) psychological interview, (iv) assessment. The actual procedures used in any one case depend upon the composition of the psychology unit or detachment carrying out the work, the purpose of the examination, the facilities available and conditions of work, and the characteristics and qualifications of the person being examined. Details of all procedures are entered in a specially designed record card.

Preliminary Interview.

Members seeking vocational guidance and those specially referred for other reasons are each given a short preliminary interview to determine the applicability of the other procedures. In the case of recruits, reallocation cases *et cetera*, the preliminary interview is omitted, an explanatory and motivating "pep talk" being substituted.

Mental Testing.

At first nearly all personnel tested were put through the following battery of tests: (i) general classification test, (ii) speed and accuracy test, (iii) mechanical comprehension test, (iv) space form test. Additional tests were given to special groups, and any person who for any reason could not, or would not, undergo the group tests, was examined individually by an army psychologist, who had at his disposal a selection of tests including such well-known tests as the Stanford-Binet test, the Wechsler-Bellevue test and the Kohs block test, and a selection of performance tests and personality tests.

The system outlined above had certain disadvantages, and in November, 1943, the single battery of tests in use was replaced by the present system of multiple batteries. On the basis of an intelligence test of the Otis type, the groups examined are split at about the median of Standard Recruit Population. Those above the median go on to do an "upper battery", consisting of verbal and number intelligence tests, speed and accuracy ("clerical") tests, and dictation and mechanical comprehension tests. The below-median subgroup is further split on a "battery" consisting of a non-verbal intelligence test and a test of literacy. All who do poorly in this battery, whether because of low ability, illiteracy, instability or unwillingness, are referred for individual examination, the standard test given being an Australian army revision of the Stanford-Binet test, which was shortened and validated for use with subnormal Australian adults. The remainder of the submedian group are further tested with the mechanical comprehension test.

Psychological Interview.

On completion of the testing programme, each subject is interviewed by a psychological examiner. Information is collected on educational and occupational history, interests, military experience and preference. This information, together with details of family history and observations made during the course of the interview, is entered on the record card. The duration of an interview depends on the object of the examination, and may vary from ten minutes to over an hour.

Psychological Assessment.

Psychological assessment, the final stage of psychological examination, is almost invariably carried out by an army psychologist; but experienced psychological examiners are sometimes used in routine cases. The assessor peruses each record card showing medical and trades assessments, test results and interview record, and briefly reinterviews the subject. The psychological assessment, which varies in content according to the purpose of the examination, is written on the record card, and for soldiers in detention, for psychiatric or specially referred subjects, and for applicants for reconstruction training or vocational guidance, it is also entered in the appropriate report form.

EVALUATION.

It is not yet possible to give a full account of even the main experiences and findings of the army psychologists, but a few generalizations may be made.

Mental Calibre of Army Personnel.

The results of testing the first 1,500 recruits examined (which were taken as the standard norm sample) were lower than might perhaps have been expected. There were two possibilities: either the sample was a bad one, or the army was obtaining a poor share of the available manpower. A few months earlier, among personnel of a motor brigade, a similar distribution of test scores had been obtained, and later an infantry training battalion was examined with similar results. Complete confirmation of the adequacy of the sample, however, came later, when it was found that of the total of over 43,000 recruits and reallocation subjects tested up to the end of April, 1943, only 51% were above the average of the original standard population.

Perusal of test results from various other groups of the population showed that munitions trainees, Royal Australian Air Force aircrew and Royal Australian Air Force groundstaff were of much superior quality. It was considered, however, that the army had previously received a better type of recruit, and this view was borne out by subsequent examination of various army groups and units. A similar "downward selection" of army recruits has been observed in every modern industrial community at war in which psychological testing has been carried out. During 1943 and 1944, the quality of recruits was such that 27% of all recruits who passed the medical boards were found to be drawn from the bottom 8% of the civil population; but in 1945 curtailment of the munitions industries and Royal Australian Air Force recruiting, and the reservation of rural workers as essential to industry, resulted in a great improvement in army recruits, which was sustained to the end of the war. The introduction of the rejection levels in 1944 cut off the bottom 12% of the intake, and the resultant allocation subjects from recruit training centres were well up to the average of the rest of the army.

Examinations undertaken in training depots and units confirmed the general impression already gained that in all functioning components of the army, except those in which a large proportion of labourers is employed, the personnel are well up to the standard of the civil population. However, the heavy drainage of specialists to the technical units has tended to keep down the quality of infantry reinforcements.

Further evidence on the distribution of ability within the army was obtained from the examination of special groups. As might be expected, candidates for officer pre-selection were well above average, and those accepted for training were even better. Officers were of higher quality

still, but no increase in general ability was found with increase in commissioned rank; factors other than intelligence are more important here. Non-commissioned officers were found to fall in ability between officers and privates. The first groups of soldiers examined in detention were below average; but when the method of referring these subjects changed, the quality of the group rose to that of the standard recruit population. Psychiatric subjects were generally found to be of much lower ability, but as only those presenting special difficulties were referred for examination, no general inferences concerning psychiatric casualties can yet be made from psychological records. The findings outlined above are summarized in the diagram given in Figure I.

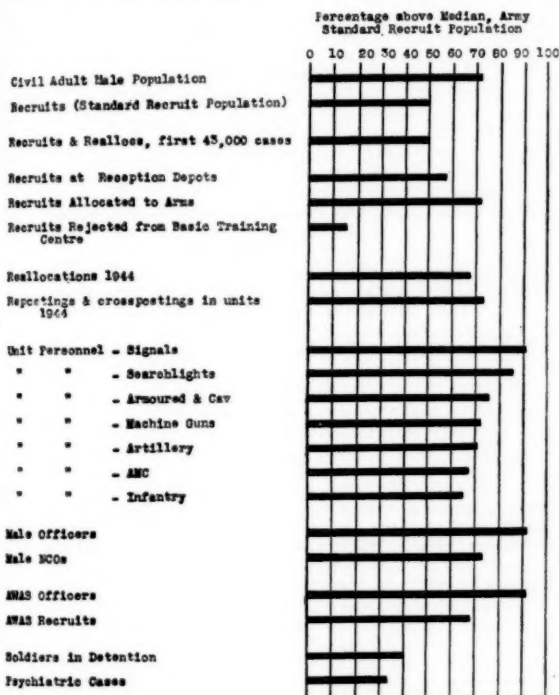


FIGURE I.

Figure II is a similar diagram of the results obtained when the personnel of a motor division headquarters were examined. This diagram clearly indicates the tendency to "natural selection" which occurs in the army; but it does not, of course, show the length of time that it takes the army to carry out this "natural selection", nor does it reveal the army's failure to exploit the ability and skill of many high-quality personnel, or the way in which those of restricted ability, regarded as wasters and handled "firmly", are kept at tasks beyond their capacity and drift to unhappiness, discontent, inefficiency and delinquency. The psychology service does not do anything very different in principle from what the army has already been doing with its recruits; it merely does in a few hours what previously often took many months, and at the same time reduces the waste of men of both high and low ability.

"Trainability."

The army rejection levels were based on a comparison between level of general ability and satisfactoriness in training. The general ability rating at each level is usually fixed by appropriate group tests; but at the lower end of the range it has to be determined more carefully by the use of individual tests. In order that consistent levels could be fixed, a preliminary investigation of the

various tests was made. The general classification test was found to be an efficient predictor of success in training, and test "AGCI" (the Australian army revision of the Stanford-Binet test) was similarly effective at the lower end of the scale. Although it, too, is an "intelligence" test, the Kohs block test was found to be useless as a predictor of training success in the lower group. The degree of literacy was also found to be of some importance.

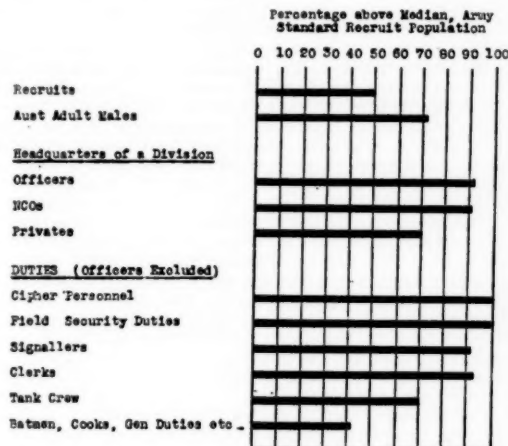


FIGURE II.

These results suggest that it is not "intelligence" as such that determines the minimum level of acceptability for training, but intelligence in a verbal medium, with some degree of literacy. The necessarily verbal nature of the training methods in use seems to be a possible explanation of this, and it is likely that sweeping changes in training methods would have to be made to permit full use of personnel who score poorly on the tests in present use, but well on "performance" tests of the Kohs type.

In other words, the criterion for the acceptance of recruits is not a hypothetical "intelligence", but practical "trainability".

"Soldierability."

An investigation which is at present in progress has thrown further light on the effectiveness of the psychological procedures used. Full records of about 1,400 recruits who were enlisted consecutively in Victoria early in 1943 are being examined. Results are far from complete; but it is certain that "good" scores on the general classification test are, when compared to "poor" scores, found to be closely related to satisfactory length of service, to shorter time for training, and to less time lost by leave-without-pay, stay in hospital, illegal absence or detention. This suggests that such a test is a good measure of "soldierability". (On the other hand, no relationship was found between test score and either the receipt of wounds in action or incidence of malaria in a group of riflemen; there is, of course, more to "soldierability" than can be measured by means of the general classification test.) The value of test "AGCI" as a predictor of "trainability" is undoubted; but there are grounds to suspect that an individual test of this nature may not (within its range of application) be as good a predictor of "soldierability" as is a test like the general classification test, which involves work at fairly high pressure in a group situation which tends by its very pressure to eliminate the neurotic and unstable, and which, it is held by some, may perhaps provide a score bonus for the otherwise mentally dull "wangler" who can perceive methods of exploiting its structure to his advantage. These and many other questions remain to be settled; it is hoped that the investigation mentioned above will provide some leads.

Other Problems.

No attempt will be made here to discuss the problem raised by experiences in the selection of officers and in the handling of soldiers in detention. Nor is it possible to do even simple justice to the painstaking and thankless work of the small administrative and research teams which have provided the coordination necessary in an undertaking of this size. It is hoped that the lead given in this paper will encourage all concerned to record their experiences.

General Observations.

Finally, the overall results of psychological examinations may be stated briefly. The examination of recruits, and particularly the institution of rejection levels, has been followed by a pronounced decrease in the failure rate in training depots, and by widespread satisfaction throughout the army with the improved quality of trainees received (although they are only the same kind of personnel as were obtained before, distributed differently). The examination of soldiers in detention and of reallocation subjects has at least simplified the task of the staff officers dealing with these matters. Preselection procedures resulted in a fall of the failure rate in officers' schools from 40% to 10%; but the proportion of entrants coming through the preselection board was so small that its value to the nation has been negligible. Vocational guidance is of most use to the persons concerned; its value to them must be a matter for personal assessment at a later date. The mental hygiene value of adjusting men, both soldiers and civilians, to jobs that they like and can do, cannot be assessed, but it would appear to be great.

Like most other specialist groups, the Army Psychology Service is unable to demonstrate the effectiveness of its own contributions in isolation from those of others. All that can be said is that it was a necessary and effective member of a winning team.

CONCLUSION.

The work of the Australian Army Psychology Service has been reviewed briefly. It was made possible by a generous acceptance by the staff of the views and requirements of a relatively strange group of specialists, by the painstaking work of all ranks of the psychology service, and finally, by the loyal cooperation of a quarter of a million soldiers, who submitted willingly to examination because somebody told them it would help.

ACKNOWLEDGEMENTS.

I wish to thank Major-General S. R. Burston, Director-General of Medical Services, Australian Military Forces, for his encouragement and support in the early days of this venture, and the Adjutant-General, Major-General E. J. Milford, for permission to publish this paper.

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Reports of Cases.

QUININE AMAUROSIS: A REPORT OF A CASE.

By R. HERTZBERG, M.B., B.Sc., D.O.,
Captain, Australian Army Medical Corps.

THE toxic effects of quinine are well known, whether these effects follow overdosage or are seen as a result of idiosyncrasy. In the past twenty years two cases of quinine amaurosis have been described in Australia, and as far as I can ascertain, there have been no cases among Australian soldiers in this war. For this reason the following case is thought worthy of record.

Clinical Record.

Private D., aged twenty years, commenced treatment for his first attack of benign tertian malaria on January 28, 1946. On that day he was given one dose of *Mistura*

Quinina, the equivalent of 10 grains of quinine sulphate. The following day he was given three doses, and in addition *Mistura Potassii Citratis* with hyoscyamus. That evening, after having taken 40 grains of quinine sulphate, he noticed that his vision was blurred, and on waking next morning he was blind. He received another dose of *Mistura Quinina* before he was examined by a medical officer, who stopped quinine therapy forthwith and substituted "Atebrin". Vision commenced to return the following day, the soldier having been blind for twenty-four hours. He was evacuated to the mainland and reached me on the evening of February 3, 1946. At that time the findings were as follows. Visual acuity was $\frac{1}{20}$ in both eyes. The pupils were fully dilated and immobile. Apart from oedema at both maculae, no changes were found in the fundi. The fields were full (10/330 white).

Two days later there were additional changes in both fundi. The disks were pale, the right more so than the left; the arteries were attenuated and with a tendency to become buried. No change was detected in the fields (10/330 white, red, blue).

On February 14 the soldier volunteered the information that up to two days earlier he had had great difficulty in finding his way about in the dark. Examination on this day revealed no further changes.

He was examined one week later, and it was noted that the pupils were normal in respect to size and reactions; the visual acuity was $\frac{1}{20}$ in the right eye and $\frac{1}{40}$ in the left, the oedema at the maculae had disappeared, the vessels were still attenuated and the right disk was pale. On March 4, 1946, five weeks after the onset, visual acuity was $\frac{1}{20}$ in both eyes, no further changes had been found in the fundi, and the fields were full (2/1,000 white).

Discussion.

It is reasonable to assume that this is a case of quinine idiosyncrasy rather than that the lesion was due to excessive dosage. Cases of visual symptoms after small dosage (0.13 gramme, 1.0 grain, 1.25 grains) are quoted by Duke Elder,⁽¹⁾ and symptoms following doses similar to those given in this case are also common (15 grains, Smith;⁽²⁾ 50 grains, Simpson and Anderson;⁽³⁾ 40 grains, Pelter and Saskin⁽⁴⁾). Cases of blindness following massive dosage have been reported, that described by McGregor and Loewenstein⁽⁵⁾ being typical.

The cause of quinine amblyopia is still subject to controversy. One theory is that the symptoms are due to vascular changes, while the other is that the amblyopia is due to the action of quinine on retinal nerve elements. The latter is probably correct, the element of vaso-constriction being secondary. McGregor and Loewenstein⁽⁵⁾ go so far as to state that the conception of quinine blindness as caused by narrowing of retinal vessels or spasm should disappear from text-books once and for all, especially as it is likely to lead to treatment along useless lines.

The changes in the retina may be so profound as to resemble the picture produced by occlusion of the central artery of the retina. In this case oedema at the macula produced a peculiar play of reflexes, attenuation of arteries and pallor of disks. In the case described by Simpson and Anderson⁽³⁾ there were no changes in the fundi.

With regard to treatment, the important step is to attempt rapid elimination of quinine. To this end McGregor and Loewenstein⁽⁵⁾ recommend local treatment by paracentesis of the cornea and emptying of the anterior chamber for the first few days, at least, in one eye, and general treatment by purgation, copious drinks, intravenous drainage and thecal drainage. In addition, they recommend a generous intake of vitamin B complex and ascorbic acid to facilitate the processes of oxidation.

In the case described, treatment was expectant. I first examined the soldier more than three days after quinine therapy had been stopped. Vaso-dilators were not administered; vitamin B was given in the form of "Marmite".

With regard to prognosis in these cases, one cannot do better than quote Traquair:⁽⁶⁾

... some restoration of sight may always be expected, and the ultimate state of vision is always better where

the stage of complete blindness, if present, has not lasted long. The presence of disproportion indicates that further recovery may be expected, and even after several months some improvement may still occur. Apparent complete recovery of peripheral as well as of central vision may occur with remaining pallor of the discs. Permanent total blindness has not been recorded.

Summary.

1. A case of quinine amaurosis is described in a soldier with an idiosyncrasy to quinine.
2. Recovery of vision was complete and the visual fields were full.

Acknowledgement.

I wish to thank Major-General S. R. Burston, Director-General of Medical Services, Australian Military Forces, for permission to publish this report.

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REPORT OF A CASE OF TRUE INFECTIVE ABACTERIAL PYURIA.

By D. ROBSON WALLMAN, M.B., B.S.,
Adelaide.

I REPORT the following case because it appears that the condition is not well recognized, and it is one that is preeminently treatable. The recognition of many rare conditions is of satisfaction to the medical attendant only; the patient derives no benefit from the putting of a name to some incurable disease. On the other hand, the non-recognition of a curable condition may be a tragedy to the patient and a reproach to his doctor. Only my ignorance of the disease entity known as infective abacterial pyuria led to weeks of unnecessary suffering by the patient and to the waste of much valuable therapeutic material, bed space and nursing service. Ten shillings' worth of "Novarsenobillon" would have done infinitely more good than five pounds' worth of penicillin. I thought a little more publicity for the syndrome could do no harm, especially as it has apparently been recognized to any extent in English-speaking countries only during the war years, and many of us have had rather large gaps in our reading during that time.

I recognized the condition through reading a letter in the correspondence columns of the *British Medical Journal*, a note from Thomas Moore, of Manchester, giving references to an article of his in *The Journal of Urology* (Volume XLIX, 1946), and also an article by Peterson in the *British Medical Journal* of February 2, 1945, and Hugh Donovan's paper in the *British Medical Journal* of July 7, 1945, and Lydon's in the *British Medical Journal* of August 4, 1945. Reading these articles gave me a good picture of the condition, and further search disclosed articles by Ewert and Hoffmann in *Surgical Clinics of North America* (Volume XXIII, June, 1943, at page 896) and by E. M. Cook in *Proceedings of the Staff Meetings of the Mayo Clinic* (Volume XIX, July, 1944, page 377). Perusal of these papers will give anyone interested a fair picture of the syndrome of true infective abacterial pyuria. I shall not enter into a long discussion, but simply record the progress of the patient attended by me, and the dramatic response to arsenical therapy when the condition was recognized.

Clinical Record.

A.W.F., a male patient, aged twenty-five years, married, consulted me on December 20, 1945, complaining of frequency of micturition, slight scalding and urethral discharge for the last four days. The discharge was turbid only and small in amount, prostatic massage being required to obtain a satisfactory smear. Examination of the smear revealed only a few staphylococci and pus cells. The urine was slightly hazy in all three glasses, and fifteen to twenty pus cells were present per high-power field in the uncentrifuged specimen.

Thirty-five grammes of sulphadiazine and potassium citrate mixture were given over the next seven days, with slight improvement, but frequency of micturition was still present, he was passing urine two or three times at night, and the urine still contained fifteen to twenty pus cells per high-power field in the uncentrifuged specimen. The urethral discharge had cleared up. The urine was then acidified with mandelic acid, but this treatment had to be discontinued in three days, as it greatly increased the frequency of micturition and dysuria. A course of 35 grammes of sulphamerazine and potassium citrate mixture was then given without any improvement.

An attempt to induce the patient to go into hospital was unsuccessful, as he said that he felt well apart from the frequency and scalding, and he did not report again until the middle of March, 1946, when he came in with traumatic synovitis of the knee. Inquiry concerning the urinary condition elicited the fact that he was passing urine every half hour at night and every hour during the day. The urine was cloudy in all three glasses and full of pus cells. After it had stood, over one and a half inches of deposit consisting almost entirely of pus were present in a conical glass. Apart from the frequency of micturition and dysuria he felt well. He consented to go into hospital, where a full examination was made with the following results. The Mantoux test with 1/1,000 tuberculin produced no reaction; the Wassermann test produced no reaction; the urine had a specific gravity of 1.016, was alkaline, and contained a trace of albumin and a large amount of pus. Deposits were examined for organisms, especially tubercle bacilli; no organisms were found. Attempts at culture in both solid and liquid media were without result.

A cystoscopic examination showed that the bladder was very irritable and its capacity was reduced to 150 millilitres. The whole of the mucosa was intensely red; some patches of oedema were present, and shreds of white fibrinous material were adherent to the mucosa. No ulcers were seen. The urethral openings were no more affected than the rest of the bladder. Attempts to pass ureteric catheters were unsuccessful, as the catheter was held up on both sides at one centimetre, and in view of the angry appearance of the bladder the attempt was not persisted in. The appearance of the whole bladder mucosa put one in mind of acute weeping eczema.

Excretion pyelography revealed normal excretion; good visualization of the pelves and ureters was obtained on both sides; some slight dilatation of the ureters was found, but no definite abnormality. No calyceal erosion was present. In the lower third of the right pelvis was a small area of increased density thought to be possibly due to a stone, but this shadow could not be seen on the plain film.

The bladder was distended as much as possible in an attempt to increase the capacity, but the amount of 200 millilitres was the limit of tolerance. The frequency of micturition was slightly less for a day or two, but not significantly so. The patient was then given 1,000,000 units of penicillin (15,000 units at intervals of three hours) without benefit. Examination of the urine by another laboratory following the course of penicillin again gave negative bacteriological findings. The bladder was next washed out three times a day with "Zephiran" solution (1 in 5,000), but this was discontinued after three days, as the washes caused much pain and only increased the frequency of micturition. Mandelic acid was again tried, with disastrous results, as on the first night the urine was made acid the patient did not sleep at all, having constant dysuria with much strangury. He had now been in hospital

over three weeks, and all the time the pulse and temperature had been normal, despite the horrid-looking urine which mocked me each morning with a two-inch deposit of almost pure pus cells. Urine was passed on an average five or six times at night and eight to ten times during the day; this frequency of micturition was the only symptom complained of. The patient's appetite and general well-being were normal.

It was now that I at last read with a receptive mind an account of infective abacterial pyuria, as I am sure I must at least have glanced through some of the articles in the *British Medical Journal* without realizing that the condition was a definite entity. "Novarsenobillon" (0.3 gramme) was given the next morning, with the most dramatic results. That night the patient slept for four hours on end, passing urine three times only from 7 p.m. to 7 a.m. The urine contained only about half an inch of deposit, where it had previously contained two inches. The next night he slept for eight hours straight off, and the urine was clear to the naked eye; microscopic examination of the uncentrifuged urine revealed ten cells per high-power field. The patient left hospital and returned to work, and three days later was given another 0.3 gramme of "Novarsenobillon". He was then without any discomfort and passing urine three times in twenty-four hours; the specimen still contained eight to ten pus cells per high-power field. A third dose of 0.3 gramme of "Novarsenobillon" was given, and a week later there were no pus cells in the urine and cystoscopic examination revealed a perfectly normal bladder.

Discussion.

Until the aetiology of this condition is proved, it seems that the name "true infective abacterial pyuria" is the most appropriate. The clash between the words "infective" and "abacterial" immediately arrests one's attention; it denotes a clinical entity, and also the suggestion that the most likely cause is a virus infection. "Sterile pyuria" as a name means very little, as pus in sterile urine may be found in many conditions besides true infective abacterial pyuria, especially in resolving ordinary infections.

Treatment.

Three or four doses of 0.3 gramme of "Novarsenobillon" are recommended by most authorities, though from the way the condition cleared up it would almost appear that two would suffice for complete cure. Many of the reported cases had dragged on for many months or years before diagnosis. Large doses do not seem at all necessary, and if this treatment is to be used as a therapeutic test, which is the only way we have at present of proving the diagnosis, there is very little risk in using a dose of 0.3 gramme of "Novarsenobillon".

Symptoms and Diagnosis.

The condition has a fairly sudden onset with gradually increasing frequency and strangury and perhaps slight urethral discharge, and the subject is usually a young adult male. Though the disease is by no means confined to this age and sex group—cases having been described at all ages except childhood and in both sexes—the actual sexual period of life is most common. This fact, combined with a varying degree of pus in the urine, frequently heavy and resisting all ordinary forms of treatment, and with consistently negative bacteriological findings and no constitutional symptoms, should at once excite suspicion of the presence of true infective abacterial pyuria. The cystoscopic appearance of an intensely inflamed, intolerant bladder without particular involvement of the ureteric area is unlike the tuberculous bladder, the condition most likely to cause confusion. In fact, many of the cases in which supposedly tuberculous kidneys were removed, no tubercle bacilli in the urine and no definite kidney lesion having been found, were probably examples of the disease. The ureter and pelvis may be affected later in the illness, perhaps more on one side than on the other, a picture of calyceal destruction being produced, so that one should never remove a kidney for supposed tuberculous disease without finding tubercle bacilli in the urine or giving a

therapeutic test course of "Novarsenobillon". Moore quotes a case of Donovan's in which this occurred. Medical practitioners in the country without access to laboratory facilities would, I think, be justified in giving a test dose of 0.3 gramme of "Novarsenobillon" without attempted culture of the urine in suspicious cases, as with this small dose there is very little risk of toxic reactions. Since writing the foregoing I have read in *THE MEDICAL JOURNAL OF AUSTRALIA* of April 20, 1946, the case of amicrobic pyuria reported by R. S. Lawson. This describes the condition much better than I can, and the fact that he has encountered three cases proves that the condition is not particularly rare in Australia. Though this is the first report in Australian literature of which I know, in all probability there are many cases about awaiting diagnosis. This fact, I think, justifies my belief that the publication of the present report in the journal will not mean waste of space.

Reviews.

RÖNTGEN AND HIS NEW KIND OF RAYS.

TOWARDS the end of last year scientific and medical societies throughout the world were proud to celebrate two events of historical importance—the centenary of the birth of Wilhelm Conrad Röntgen in 1845 at Lennep in Rhinish Bavaria, and his discovery of the X rays in the Physical Institute at Würzburg fifty years later. Just as the celebrations were taking place, Dr. Otto Glasser made a helpful contribution to the interest of the occasion by the publication of his book, "Dr. W. C. Röntgen", particularly as he is a noted authority on his subject.¹

The story of Röntgen's life from beginning to end holds an inspiring message for all youthful students imbued with the desire to find satisfaction in the vicissitudes of a scientific career. As we read of Röntgen's early struggles to gain academic status in the various universities and technical schools, of his steadfastness of purpose in the acquisition of a sound knowledge of the physical sciences and in perfecting his technical skill in the laboratory, we cannot help admiring the modesty, simplicity and transparent honesty which characterized all his actions as a man and a scientist. Even his sudden elevation to the exalted position of an international celebrity failed to disturb his regular routine or his equanimity, for he still continued to regard his remarkable discovery as something in the nature of an "accident". The short paper, "On a New Kind of Rays", which he hurriedly completed in December, 1895, continues to hold its place as a shining example of logical thought, brevity and clear exposition; his facts were so carefully marshalled and his observations so critically examined that no flaw could be found in the final conclusions when his experiments were eagerly put to the test by other distinguished physicists.

In his book Dr. Glasser interestingly recalls the long line of investigators whose discoveries eventually led to the detection of the invisible and penetrating rays of Röntgen; and it goes all the way back to the beginning of the seventeenth century when Dr. William Gilbert, President of the Royal College of Physicians, taught the first lesson on electro-magnetic forces and coined the magic word "electricity". Then came the Burgomaster of Magdeburg, Otto von Güricke, who demonstrated that it took a team of horses to overcome the great pressure exerted by a Torricellian vacuum. In the next century Francis Hauksbee in England and the Abbé Nollet, tutor in natural philosophy to the French royal family, succeeded in bringing the electrical discharge and the vacuum together. These entertaining experiments were the foundation upon which modern scientists were to build, and Sir William Crookes made use of them in his investigation of the cathode rays. It was while occupied in repeating some of these exercises with a Hittorf tube that Röntgen forged a connecting link between the desultory developments of the past and the rapid sequence of subsequent events which has made possible the use of radium, wireless telegraphy, radar, and now the practical application of atomic disintegration as a frightful means of destruction.

¹ "Dr. W. C. Röntgen", by Otto Glasser; 1945. Springfield: Charles C. Thomas. 8½" x 5½", pp. 179, with illustrations. Price: \$4.50.

There was a time when the average citizen concerned himself very little with the strange behaviour of people who tucked themselves away in the seclusion of scientific laboratories. But recent developments in the physical sciences have made such a profound impression on the minds of all thoughtful persons that each progressive step made towards a mastery of the laws of nature has become a matter of international importance. There may be serious repercussions on the future of the human race.

This authentic account of the life and work of the man who discovered the X rays should have almost a universal appeal, because all owe him a debt of gratitude for the great benefits humanity has received at his hands.

A YEAR BOOK ON GENERAL THERAPEUTICS.

"THE 1945 YEAR BOOK OF GENERAL THERAPEUTICS" has been published under the editorship of Oscar W. Bethea.¹ It covers the ground very well and may be recommended to practitioners. This year a great deal of space, as would be expected, is devoted to penicillin and its use in different conditions. The editor gives prominence to the work that has been done on subacute bacterial endocarditis and on syphilis. He thinks that it is too soon to draw final conclusions on the results of penicillin treatment in the latter disease. The sulphonamides are accorded a good deal of space; of these drugs sulphadiazine is said to hold pride of place. There are several references to the treatment of burns. The pages on infusions and transfusions are good and those devoted to the hormones are perhaps a little disappointing. The small amount of material included under the latter heading may perhaps be a caution, a "go carefully" sign, to the practitioner who is over-enthusiastic in hormone therapy. Thioracil is discussed by more than one author, and the editor thinks that more will be heard of the use of this drug in *angina pectoris*. It is unnecessary to enumerate more of the prominent features of this book. The best thing that practitioners can do is to buy it and read it.

PROCTOLOGY AND AMBULANT PATIENTS.

The explanation of the title "Ambulatory Proctology" is "the diagnosis and treatment of diseases of the anus, rectum and sigmoid colon without confining the patient to bed".² It is stated that if a proctologist excises a pilonidal cyst, performs an extensive hemorrhoidectomy or amputates a rectal prolapse and afterwards returns the patient to his home, although not necessarily to bed, the patient has been treated by ambulatory proctology. In such a practice "the office" is really an operating theatre.

The instructions detailed for the patient to carry out before coming to the "office" for operation are rather overwhelming, and it is probable that few patients only would be able to carry them out efficiently and that surgical cleanliness would be a rarity. The operative procedures of the author on the rectum and anus in his office are what would be considered by most surgeons to be of a major variety, and the patient is often permitted to drive himself home in his own motor-car. Ambulatory treatment is advocated to save expensive hospitalization and to allow the victim to carry on his usual occupation. It may be asked if the end-results obtained in this way are satisfactory and whether the final cure is not often unduly prolonged without rest in bed and expert nursing. Pain and discomfort can be most distressing after operations on the rectum and anus and retention of urine and unexpected hæmorrhage do occur even after the most skilful surgery. On or about the tenth day the possibility of secondary hæmorrhage after the cauterization of piles must be considered and can be alarming.

The work is comprehensive and gives an extensive review of the diseases affecting the colon, rectum and anus, both medical and surgical. The anatomy of the rectum and anus is soundly discussed, diagnostic measures are thoroughly gone into and almost every disease of these parts is mentioned in the 32 chapters which cover 524 pages. The print is easy to read, the illustrations are most explicit. The

author has wide ambitions for the proctologist of the future, who, he thinks, should be specially trained in clinics devoted solely to the study of the diseases not only of the rectum and anus but of the colon. The opinion is expressed that the time is ripe for the proctologist to turn his attentions to the abdomen and be prepared to cope with any emergency affecting the colon and rectum and even to carry out hysterectomy in the female. Such suggestions seem out of place in a work with the title "Ambulatory Proctology". Apparently quackery is rife in America, and one great aim of this work is to "beat the quack at his own game". There is a school of surgical thought active today, and, of course, it is a revival, urging early ambulatory treatment, even after the most extensive abdominal operative procedures. Most surgeons look upon such outcrops as fads which generally fade from the horizon. To sum up, the work on the whole is stimulating and those inclined towards ambulatory treatment after operation will glean valuable information from it.

NOTABLE NAMES IN MEDICINE AND SURGERY.

It must have been gratifying to Dr. Hamilton Bailey and Mr. W. J. Bishop, the joint authors of that interesting and compact little volume, "Notable Names in Medicine and Surgery", to find that their efforts had been so readily appreciated by the medical profession as to warrant the publication of a second edition within a few months of the first publication.³ In a previous review of the book in these columns at the beginning of last year it was anticipated that a theme so original in conception and a text so helpfully illustrated would be sure to attract the attention of a great many readers. Although the subject matter in the new edition is substantially the same as it was, it has been considerably enriched by the addition of some thirty worthwhile illustrations.

The book contains short biographical sketches of eighty more or less distinguished personalities from Hippocrates to Böhler, whose names have become eponymous in medical literature through their inventions or discoveries. What could be more helpful to the memory than to see the portrait of a founder of modern gynaecology, James Marion Sims, with a drawing of his speculum and of a patient in the left lateral position, accompanied by a description of the circumstances which prompted the invention, even if it might be a little disappointing to observe the caduceus of Hermes carved upon his monument, when the staff of Æsculapius might have been far more appropriate.

As an example of clarity and conciseness in description the account given of the discovery of the Röntgen rays is worth quoting in full:

On the night of November 8th, 1895, Professor Roentgen was investigating the phenomena accompanying the passage of an electric current through a vacuum tube. The laboratory was in darkness and the tube with which he was working was covered by black cardboard, which made it impervious to any light known. To his astonishment Roentgen noticed that when the discharge was passed through the tube some crystals which lay upon a table some distance away became brilliantly illuminated. Roentgen knew that something unusual had happened and he set out to find the cause. He placed some of the crystals at a greater distance from the tube, yet still the mysterious fluorescence could be demonstrated. He then placed materials of greater density between the tube and the crystals. First he used a book, then wood and then plates of various metals, and found that all were transparent to the rays in different degrees. Finally he placed his own hand in the path of the rays and saw that the bones within it were outlined clearly. From this it was but a short step to substitute a photographic plate for the fluorescent screen—and the science of radiology was born.

At the end of the book a distinctly modern trend is noticeable in the chapter dealing with Lorenz Böhler and his splint. The insurance companies in Vienna felt concern about the tremendous increase in traffic accidents and in compensation claims for industrial injuries, so in 1924 they decided to establish and maintain a special hospital with a competent surgical staff and all the latest equipment

¹"The 1945 Year Book of General Therapeutics", edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P.; 1946. Chicago: The Year Book Publishers Incorporated. 7" x 4½", pp. 456, with illustrations. Price: 25s.

²"Ambulatory Proctology", by Alfred J. Cantor, M.D., with a foreword by Beaumont S. Cornell, M.D.; 1946. New York and London: Paul B. Hoeber Incorporated. 9½" x 6", pp. 544, with many illustrations. Price: \$8.00.

³"Notable Names in Medicine and Surgery", by Hamilton Bailey, F.R.C.S. (England), F.I.C.S., and W. J. Bishop, F.L.A.; Second Edition; 1946. London: H. K. Lewis and Company Limited. 7½" x 5", pp. 210, with many illustrations. Price: 15s. net.

in the hope that the patients would return to work more quickly and suffer less permanent disability. The experiment seems to have been a success, for not only was the economic object achieved, but the hospital became a famous research centre and medical practitioners from all parts of the world came there for post-graduate study.

The date given for the birth of Dr. Thomas Addison may be incorrect, as some reliable authorities give it as April, 1793.

Further editions of this valuable book are sure to follow as it becomes more widely known.

PSYCHOTHERAPY.

ALL who are interested in understanding and treating neurotic patients will find much useful information and many helpful suggestions in Dr. Herzberg's publication, "Active Psychotherapy".¹ This small, concise book is directed almost entirely to the practical application of modern psychotherapy. The common symptom groups and problems of social maladjustment are freely used in the illustrating case histories.

Dr. Herzberg does not follow any one orthodox school of psychoanalysis, but has chosen from each what he has found of practical service. Emphasis is laid upon the fact that repression is not always the essential cause of the continuance of a neurosis. The author therefore looks for causes maintaining the neuroses, namely, for obstacles preventing normal satisfaction, essential predisposing factors, delaying factors and gains to be achieved by the continuance of the neurosis. To overcome these factors he frequently prescribes, during the course of analytical treatment, tasks which are directed against particular undesirable habits of behaviour. Causes of relapse are detailed and many practical suggestions are given in the handling of patients. The problems of moral and social responsibility that are likely to be found by the physician in the socially maladjusted patient are also clearly discussed. The book cannot but be of interest to all who practise psychological medicine and to many who desire a more constructive approach to their neurotic patient.

PROGRESS IN OPHTHALMOLOGY AND IN OTO-RHINO-LARYNGOLOGY.

"THE 1945 YEAR BOOK OF THE EYE, EAR, NOSE AND THROAT" is divided into two main parts.² The first, dealing with the eye, is edited by Louis Bothman and comprises 300 pages of the work. The editor gives pride of place to a special article by himself on allergic iritis. This article was read by him at a meeting of the Illinois Medical Society; it deals with four patients suffering from iritis who were allergic to various substances. Bothman hopes that his paper will stimulate others to investigate the allergic aetiology of iritis. Reference is made to a paper by A. L. MacLean on Sjögren's syndrome (*keratoconjunctivitis sicca*). The editor in a footnote states that he has had experience of the condition in several patients who obtained no relief from any form of treatment and disappeared from observation. It would be interesting to know what treatment was used, especially in view of the type of "artificial tears" prepared by J. Bruce Hamilton from blood serum, Locke's solution and "Chloretone". Several references are made to the occurrence of congenital ocular defects following infection of the mother, and an article by J. C. Long and R. W. Danielson is abstracted in which assent is given to the debatable conclusion that the gravity of the congenital lesions and the likelihood of their development may warrant therapeutic abortion if the mother has suffered from rubella during the first three months of pregnancy. The section on neurology and visual fields is full of material that will be useful to the physician as well as to the ophthalmic surgeon. Among the subjects considered are synkinetic phenomena and the Argyll-Robertson pupil, visual disturbances produced by cerebral lesions, early ophthalmic findings in spontaneous subarachnoid hemorrhage, ocular signs in *myasthenia gravis* and multiple sclerosis, Dervic's disease, psychogenic ocular

symptoms, the disintegration and restoration of optical recognition in visual agnosia and the interpretation of the visual fields of neurotic patients. In the section on therapy the use of penicillin in ophthalmic conditions is discussed at some length. Many diverse conditions, including cataract and glaucoma, are mentioned in the section on injuries. There is a useful section on miscellaneous conditions.

The part of the book on the ear, nose and throat is edited by S. J. Crowe with the collaboration of E. W. Hagena. *Otitis externa* and the problems of aviation deafness are mentioned. Otosclerosis is discussed at some length, contributions by Lempert, Simson Hall and others being abstracted. Ménière's syndrome has been treated by the administration of nicotinic acid and also by histamine; the results are described. There are several important references to the facial nerve, its anatomy and its relation to surgical procedures.

As an introduction to the part devoted to the nose and throat, the editor contributes a valuable short statement on facts that have to be remembered in connexion with the use of the sulphonamides and penicillin. This serves to introduce a section on chemotherapy in which many subjects are mentioned. It is interesting to see several references to the results of the inhalation of penicillin in different bronchial conditions. Encouraging results are reported from the protracted fractional X-ray treatment of cancer of the larynx.

This volume will be as useful and as highly prized as its predecessors have been.

RECENT WORK IN INDUSTRIAL AND ORTHOPÆDIC SURGERY.

THE work carried out last year in the fields of industrial and orthopædic surgery has been summarized in "The 1945 Year Book of Industrial and Orthopedic Surgery".³ This book is a member of the "Practical Medicine Series", other members of which have been noticed in these columns. The present volume has been edited by C. F. Painter. It is divided into two parts. The first part deals with orthopædic surgery and the second with industrial medicine and surgery. Both these parts are divided into several sections, dealing with different aspects of their respective subjects, and the matter consists of a short account of the work of different authors who are named, the journal in which the article appeared being indicated in a footnote.

In the preface to the part on orthopædic surgery the editor draws attention to its most important features. The subjects most discussed have been arthritis, osteomyelitis and infantile paralysis, and reference to the work abstracted reveals many interesting views about them. There are four references to gold therapy in rheumatoid arthritis, and the editor insists that in spite of favourable reports on its use, the evidence is strong that the dangers associated with it are great and the permanency of any relief afforded by it is uncertain. It must always be used with the greatest caution. The subject of osteomyelitis is dealt with by several authors, diagnosis, prognosis and treatment being discussed. The editor remarks that the meteoric flight of the Kenny treatment of poliomyelitis has apparently come to an end, and that experience has brought about a reemphasis on the importance of hot packs and certain modifications in the method of applying them. The articles on poliomyelitis deal *inter alia* with epidemiology, the indications for and limitations of treatment, the evaluation of the results of treatment, when the poliomyelitis patient should be splinted, the significance of muscle spasm. The section on fractures covers 126 pages and is well illustrated by ordinary half-tone illustrations and by reproductions of skiagrams which are of good quality. There are some useful and well-illustrated articles on injuries of the hands. Operative technique is considered in a space of fifty pages.

The part of the book devoted to industrial medicine and surgery is divided into four parts, dealing with general problems, toxicology, infections and specific hazards. The articles here show that increasing attention is being paid to this aspect of medicine. Some of the work is the result of wartime activities. The last reference in the book is not the least important; it deals with the protection of the worker against noise.

This is a book that should be read by every practitioner interested in orthopædics or in industrial medicine.

¹ "Active Psychotherapy", by Alexander Herzberg, M.D., Ph.D. (Berlin): 1945. London: Research Books Limited. 8½ x 5½", pp. 162. Price: 12s. 6d. net.

² "The 1945 Year Book of the Eye, Ear, Nose and Throat." The Eye, by Louis Bothman, M.D.; The Ear, Nose and Throat, by Samuel J. Crowe, M.D., with the collaboration of Elmer W. Hagena, M.D.: 1946. Chicago: The Year Book Publishers Incorporated; Melbourne: W. Ramsay (Surgical) Pty. Ltd. 7" x 4½", pp. 544, with illustrations. Price: 24s., post paid.

³ "The 1945 Year Book of Industrial and Orthopedic Surgery", edited by Charles F. Painter, M.D.: 1946. Chicago: The Year Book Publishers, Incorporated. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7" x 4½", pp. 432, with many illustrations. Price: 24s.

The Medical Journal of Australia

SATURDAY, JULY 20, 1946.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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"A CHARTER FOR HEALTH."

THE long discussions that have taken place in many countries during the last few years on the provision of a complete medical health service for the community have among certain people given rise to the impression that the provision of medical advice and treatment for illness or other disability is all that is needed to make people healthy. The idea seems to be that if doctors are at hand to be called upon when illness threatens or actually takes place, if medicines and other therapeutic agents are available with nursing attention and hospital accommodation when it is required, people need have no anxiety in the matter of health. No one will deny that doctors must be available in sufficient numbers to attend to those who are ill in body or mind, that the aids to medical treatment in the form of drugs or apparatus should be within the reach of every sick person, and that the number of hospital beds in a community should be equal to its needs. Everyone will also agree that matters must be so arranged that the cost of these services shall not be an undue burden on any person in the community. But the occurrence of illness can be looked on only as a defeat, as a failure, individual and communal, in the battle for health. This means that health is not a negative state, a freedom from illness; it is a positive condition which must be sought, and having been won, must be maintained, and, being enjoyed, must be turned to good account. The idea that the provision of a medical service is of itself sufficient for the well-being of a community is fostered to a certain extent by the emphasis laid on it by governments which apparently prefer to tackle a problem piecemeal, and in so doing approach it from the wrong end. The need for the dissemination of knowledge on the significance of health and on the many aspects of life that have to be covered in its attainment, was never greater than it is today. The reason for this is twofold. In the first place the pace of human existence is greater than it ever has been. Man has wrested from Nature more and more of her secrets, he has turned most of his discoveries to a practical use, and so he expects

more of life. In his hurry he has not taken time to adjust his mental outlook, to develop a philosophy of life commensurate with the stress of his existence; he is therefore subjected to wear and tear that he cannot meet, his body the more readily becomes a prey to disease and his mind to unrest with its many consequences. The other reason why knowledge should be spread is that governments with paternal intent or with misguided largesse offer to the community a structure which should be understood before it is accepted.

At the present time the people in Great Britain are having presented to them a cut-and-dried scheme for a medical service, and in this scheme hospital and other matters are to be controlled. The attitude of the British Medical Association towards the British Government's measure has been made clear in the columns of this journal and also in recent issues of the *British Medical Journal*. The Parent Association is not content to put forward its views of how a medical health service should be set up and controlled; it thinks that the people of Britain should understand what health means and how the members of the medical profession think that health can be attained. In order that a "comprehensive statement of the profession's views on the basic principles of health" might be made, it set up a committee to prepare an authoritative statement which might be termed "A Charter for Health". The committee, with Sir John Boyd Orr as its chairman, consisted of 22 persons, representative of every branch of the profession; five of them were general practitioners. The statement drawn up by the committee has been published in an attractive and well-illustrated book.¹ The message of this book, though necessarily compressed, is complete and gives to health matters a perspective that is necessary to our national well-being. The role of medicine in the community is not and cannot be obvious to every man and woman. At the same time most people know that many diseases which used to be fatal can now be cured or relieved to such an extent that persons affected by them are able to live a useful and active life, and in fact to behave as healthy people behave. People live longer, and we read that since 1871 the expectation of life has increased by nineteen years. This can be credited only to progress in medical science and chiefly to the practice of preventive medicine. It is being more widely recognized that just as the family doctor is the adviser of the individual patient, so the medical profession must act as the guardian of health of the nation as a whole. There are those in departmental positions who are specially trained for this work, but, as medical practitioners know full well, public health doctors can never fulfil their destiny without the help of the practitioner in attendance on individual patients. If this is understood, then people will the more readily appreciate the problems of preventive medicine. They will pay attention, perhaps, to the oft-repeated statement that the greatest environmental causes of preventable disease are poverty, bad housing, malnutrition and ignorance. Most thinking people in the community realize that a large number of deaths which are due to tuberculosis, rheumatism and infectious diseases could be prevented if the people as a whole had the will to prevent them.

¹"A Charter for Health", by a Committee of the British Medical Association under the chairmanship of Sir John Boyd Orr; 1946. London: George Allen and Unwin Limited. 74" x 5", pp. 96, with illustrations. Price: 6s.

Though most people know that the amount of bodily illness and permanent disablement that could be prevented is enormous, it is doubtful whether they know that the same kind of statement holds true of mental illness. Sir John Boyd Orr and his committee tell us that about 30% of all prolonged illness is estimated to be mainly psychological. How much of this mental illness is due to maladjustment to environment and how much might be avoided by the proper care and upbringing of children, it would be difficult to say. The way to prevention, we are told, is twofold. Poverty, bad housing, malnutrition and ignorance must be eliminated and medical research must be encouraged. If it is true that the expenditure of £280,000 *per annum* on the work of the Medical Research Council is inadequate in Great Britain, what can be said of the efforts put forward in Australia with its wealth of opportunity?

Passing from these important considerations, we find attention directed to the interplay of relationships between the different members of the family and to the factors which determine health in the home. When we have progressed as far as this in our discussion we presume that we are living in a community where every family can have a home. Though we know only too well that this desirable state of affairs is a long way from being realized, we must accept the presumption and follow the charter, for the final aim must be full realization of that charter. The family house of the future, we are told, should be designed for the comfort of a family with at least three children. With this most of us will agree, though many will wish that "three" was "four" or "five". But—and there is a big "but"—"a good house does not necessarily make a good home". This opens up enormous questions of psychology and of the spirit of man. On the one hand we think of the food that a family should enjoy and of the employment of the father and possibly, though not necessarily, the mother. We think, too, of the leisure that people, whether they are members of a family or not, can and should enjoy. We think of the education of children, of their outlook on life, of their attitude to religion, of the friendships that they will form, of the care that they should lavish on their bodies and minds. On the other hand we must think—and this larger aspect is inescapable—of the general spirit of the men and women of today and especially of the men and women of the rising generation. We know that the world around us is torn by suspicion, jealousy and fear. And we know only too well that no peace, no progress, no individual or community health¹ is possible until suspicion and jealousy and fear have been banished from our midst. Unless these are banished, the nineteen years that have been added in the last few decades to the life of man will be nothing but years of futility and sorrow. To strive by every possible means towards this end is part of the striving towards perfect health. The British committee refers to the satisfaction of human needs and the promotion of human welfare as the basis of international as well as of national policy. We must dig more deeply than this and look for a change of mind that will think less of personal needs and more of the welfare of other people. When this happens health will be a matter of the whole man, and medicine, being fully aware of its destiny, will, like every other human activity, take its natural place without much ado.

Current Comment.

CORONARY LESIONS IN MALIGNANT MALARIA.

CEREBRAL MALARIA is now an entity well known to many medical practitioners in this country. It has, of course, been seen most frequently in operational areas, though a few cases have occurred in Australia mainly owing to the lack of adherence to instructions by the patients themselves. It is also well known that the peculiar predilection of the falciparum parasite for some of the important outposts of the peripheral circulation may cause symptoms and signs of extraordinarily protean types. Of these the so-called algid type of malaria has a malign reputation, and there also occur cases in which the patient may die from what appears to be cardiac involvement of some sort. Lieutenant-Colonel W. C. Merkel has published some observations on proven coronary lesions due to malignant malaria, which fall into line with manifestations in other organs.¹ He points out the paucity of studies on the coronary system in fatal cases of malaria. In his article he gives particulars of two patients who died after brief illnesses proved to be malarial. One was a man of seventy years of age who lapsed into coma after being treated for some days for diarrhoea, and died after six hours. His blood contained large numbers of *Plasmodium falciparum*. At autopsy the capillaries of the brain were plugged with myriads of parasites, but even more striking was the filling of the radicles of the coronary circulation with ameboid forms, adhering to the intima in the usual way.

The other case was more dramatic, for the subject was a soldier on furlough who collapsed in the street. Blood examination showed heavy infestation with the falciparum parasite. Treatment was given, but its nature is not stated. This man, who was only thirty-three years of age, died five hours after admission to hospital. In this case also the capillaries of the brain and also of the heart were crammed with parasites. It was noted that the skin was stained as if with "Atebrin", but it is not recorded whether he had been taking the drug recently. Good illustrations are given of sections of the cardiac muscle, showing the malarial parasites in the capillaries. The lesions in the heart were found to be rather sharply demarcated, after the fashion of infarcts, but there was no sign of hemorrhage or of demonstrable spoiling of the muscle fibres. Of course, one would not expect this latter in such brief and dramatic illnesses. No great numbers of parasites were found in the bone marrow, though the author remarks that it has been supposed that this organ acts as a sort of reservoir. Merkel points out that such serious interference with the coronary circulation must be of importance, though in other respects the findings in these cases were those expected in sudden or rapid deaths from this form of malaria. It is of interest that both these patients showed what is recognized as a very serious sign, hyperinfestation, which is one of the important indications for immediate intravenous injection of quinine. It is perhaps superfluous to remark that even though no parasites are seen in the circulating blood, severe and suspicious symptoms in a person who has recently been exposed to the risk of infection by the *Plasmodium malariae* are an indication for prompt action.

POST-DIPHTHERITIC POLYNEURITIS.

WAR EXPERIENCE has perhaps sharpened the interest in post-diphtheritic neuritis, not because any large-scale epidemics took place, but because occasional outbreaks were a reminder of what could happen if correct steps were not taken. Also there is now a considerable population of young people who are the epidemiological testing ground, since immunization in childhood is fortunately now widely accepted and practised. In addition, some of the experiences of the last war in connexion with wound

¹ *Archives of Pathology*, March, 1946.

diphtheria made army medical officers cautious of any outbreaks of superficial ulceration. With even such a degree of awareness there is still a danger that cases of post-diphtheritic neuritis may be missed, especially when the antecedent history is not such as to foster suspicion. M. H. Delp, G. F. Sutherland and E. H. Hashinger, all medical officers in the armed forces of the United States of America, present case histories of five patients who suffered from polyneuritis due to diphtheria.¹ The most significant feature of these cases is that they showed a common feature, increase of the protein content of the cerebro-spinal fluid without any corresponding increase of cells. The particular importance of this is that the diagnosis of the Guillain-Barré syndrome is at once suggested, although the authors present convincing evidence that the cause was diphtheria. The first case was that of a young man who complained of difficulty in swallowing and weakness, and as time went on the characteristic picture of diphtheritic neuritis appeared, including disturbances of accommodation, palatal palsy and widespread loss of power. There was a history of a sore throat with quinsy, treated with sulphonamides, and swabbings of the throat yielded colonies of the *Corynebacterium diphtheriae* which also grew from the discharge from a pigmented ulcer on the leg. Cardiac signs were also present. The other cases were equally convincing, and in all but one the specific organism was isolated, and virulence proved. In the remaining case the man in question was in a prison camp at the time of onset of his symptoms when an outbreak of diphtheria occurred. Actually three of the patients had been prisoners of war, which makes one think of possible nutritional causes, but the nature of the paralyses and of their continued advance, followed by recovery, together with the characteristic latent period, especially with the epidemiological and bacteriological evidence, puts the true cause beyond doubt. Two of the patients had cutaneous lesions. All showed dissociation of the cellular contents and the protein level in the cerebro-spinal fluid. In one case this feature was not observed at first, but appeared a little later as the paralysis became more severe. Raising of the protein level in the spinal fluid has been described before in diphtheritic neuritis, but the lack of cellular response has not been emphasized.

In discussing their cases the authors remark that the pathological findings in the Guillain-Barré syndrome are difficult to compare and to contrast with those of other forms of neuritis, because it is uncertain if this syndrome is truly a separate entity. It was originally contended that the prognosis was uniformly good, but fatal cases have been described which conformed to the classic description in all other respects. Delp and his associates have reviewed the literature; they find that the position is confused, but regard Baker's summary as representative of the symptoms of the Guillain-Barré syndrome. These include a sudden onset, sometimes preceded by a respiratory infection, cell protein dissociation in the cerebro-spinal fluid, absence of general toxic symptoms, radicular involvement, facial palsy, absence of mental symptoms, and good prognosis. This agrees fairly with the original description, though all items would not be accepted by all. Susman and Maddox, for example, found that euphoria was frequently present.²

It is generally supposed that neuronitis may be caused by severe nutritional deficiencies and by a virus infection as well as by other causes like diphtheria, and the suggestion has been made that such a name as "serous radiculoneuromyelitis" might be used to cover all groups. The characteristic flair of French neurologists for accurate formal description and classification has given us light and stimulus in the study of this important group, but it is well not to be too insistent on adherence to the so-called classic types of diseases or syndromes. There have been many cases of polyneuritis seen of recent years which have not fitted into the picture as originally drawn. Slowly medicine progresses towards the goal of aetiological

diagnosis; where specific treatment can follow specific diagnosis this is all the more important. In the present instance, we must agree with these writers that diphtheritic polyneuritis can be missed, especially when certain features may distract attention from the plain clinical story. One minor sign which they think is helpful in cutaneous diphtheritic infections is the persistence for some months of a heavy areola of brown pigmentation round the site of such an ulcer, even after healing. Lastly, they give us a good motto: "Diphtheria should remain in the clinician's mind as a dangerous disease capable of high mortality if not recognized."

CHORIOMENINGITIS IN MEN AND MICE.

BENIGN aseptic meningitis or choriomeningitis is now well known as an infection due to a virus. Fortunately it is benign, but, whether occurring as a primary infection or as a complication of other illnesses, no meningeal infection is without serious aspects. Evidence has been accumulating that choriomeningitis may be carried by mice. Mice caught in the homes of patients suffering from this disease have been found in many cases to harbour the virus. Further, once the virus is introduced into an experimental mouse colony it persists indefinitely by transmission to succeeding generations. These observations have been amplified by Gilbert Dalldorf, C. W. Jungeblut and Margaret D. Umphlet in an account of multiple cases of choriomeningitis among the dwellers in an apartment house.³ Three cases occurred among the residents of this house and a fourth in a near neighbour. The serum of the first patient was found to contain neutralizing antibodies, though the cerebro-spinal fluid produced no evidences of meningeal or cerebral infection in mice. A little later two house mice caught in the building were found to carry the virus, and a brain suspension of these animals when injected into laboratory mice produced typical convulsive symptoms. Two years later a man in the same building fell ill with lymphocytic meningitis, his cerebro-spinal fluid contained the virus and his blood stream antibodies. Again a year later another woman in the same building had an illness in which the findings were identical, and a boy living near by was also infected. It was not possible to survey the tenants of this house or to trap more mice, but the story is highly interesting and suggestive. The authors point out that similar sequences of infection have been reported, occurring over a period of years, as in this instance. They draw attention to other work published on the incidence of this virus in house mice. Figures from various surveys in American cities range from 4% to 21%. Dalldorf and his associates have examined 290 mice in Greater New York over a period of one year and found 4% infected with the virus of choriomeningitis. No virus carriers were found among eleven rats examined; these animals do not appear to be susceptible to choriomeningitis. Other workers have stated that mosquitoes, ticks and body lice can also harbour this virus; therefore there are several possibilities concerned with the epidemiology of the disease. One would think that man must have a high immunity to it, as the human incidence is not heavy, at least in a clinically recognizable form. It may be that the conditions favourable to passage of the virus from mice to men, assuming that this does take place, are not very often attained. Or it may be that the disease in one respect resembles abortus fever, in which the opportunities for infection appear to be abundant in most communities, but which appears infrequently as a clinical infection. Future research will be of interest, especially in relation to the activities of the virus of choriomeningitis in animals. It is known that it can infect monkeys, guinea-pigs and mice, and can also cause pulmonary lesions in laboratory animals of these species. But even at the present stage of our knowledge it would seem to be sound preventive medicine to discourage those lesser rodents that may be more than a minor annoyance.

¹ *Annals of Internal Medicine*, April, 1946.

² *THE MEDICAL JOURNAL OF AUSTRALIA*, February 3, 1940.

³ *The Journal of the American Medical Association*, May 4, 1946.

Abstracts from Medical Literature.

GYNÆCOLOGY.

Sore Nipples.

MAVIS GUNTHER (*The Lancet*, November 10, 1945) presents the results of a study of the causes and prevention of sore nipples. She made a preliminary investigation of 400 women and a more detailed investigation of 114. The author states that sore nipples are often the underlying cause of failure of breast feeding. They may make the mother unwilling or unable to endure the child's suckling, or they may indirectly lead to a great reduction in the rate of secretion of milk, by necessitating an interval of a day or more in suckling during the first few days of lactation. Two main types of lesions were distinguished, the erosive or petechial and the ulcerative or fissure type. The position of the petechial lesion and the strong, sustained suction found to be exerted by the baby were held to indicate that suction unrelieved by swallowing is the main cause of this type of lesion; venous congestion and lowered capillary resistance may contribute to its causation. To prevent the petechial type of lesion, the child should not be left at the breast for more than two minutes when it is obtaining nothing. The child should also take into its mouth as much of the areola as possible. The administration of ascorbic acid to the mother as a supplement had no effect on the incidence of sore nipples or on capillary resistance. The ulcerative or fissure type of lesion is thought to be the result of mechanical trauma acting on sexual skin at a period when the body has experienced a sudden withdrawal of oestrogen.

Post-Operative Exercises and Massage and Pulmonary Embolism.

JOHN P. ERSKINE AND I. C. SHIRES (*The Journal of Obstetrics and Gynaecology of the British Empire*, October, 1945), at the Chelsea Hospital for Women, have reduced the incidence of fatal pulmonary embolism following abdominal operations from 0.415% to 0.203% by instituting post-operative exercises and massage. Over a seven-year period the greatest fall in incidence was following total hysterectomy with or without removal of appendages. The exercises and massage aimed at the promotion by increased respiratory excursion of increased venous return to the heart, improvement of the circulation and muscle tone in the limbs, strengthening of the abdominal and perineal muscles, and later the development of correct posture.

Repair of Lacerations of the Perineum.

L. E. PHANEUF (*Surgery, Gynaecology and Obstetrics*, September, 1945) states that laceration of the perineum is one of the commonest lesions in gynaecology, and is generally due to childbirth, occurring during the passage of the fetal ovoid through the vagina and the vaginal outlet. Lacerations are divided into two classes, recent and remote, and the repair may be

immediate, intermediate or late. Immediate repair should be carried out at the time of childbirth, whenever the surroundings are suitable. The current practice of episiotomy, extensively employed during the last two decades, has prevented the jagged and multiple lacerations previously encountered. Intermediate repair is carried out about ten days after childbirth, when repair has for some reason necessarily been delayed. Late repair is performed by the gynaecologist or surgeon when healing of the torn tissues has taken place by scar tissue and the involution of the involved structures after parturition has been accomplished. The period after childbirth is about three months. Basing his conclusions on a series of 2,328 cases of his own, the author states that the success of the operation of perineorrhaphy depends on careful preparation of the operative field and the maintenance of rigid asepsis. Sharp rather than blunt dissection should be employed whenever possible, to avoid bruising of the tissues. The tissues should be approximated in layers, preferably four layers, rather than in a mass; this procedure maintains suppleness and elasticity as well as support, and avoids painful rigidity. Fine suture material should be used, and the tissues should be accurately approximated without tension. Finally, post-operative care of the patient should be carefully planned and carried out. The author gives a detailed description of the technique he employs in the performance of late or secondary perineorrhaphy for incomplete tears.

Therapeutic Aspects of Utero-Tubal Insufflation in Sterility.

I. C. RUBIN (*American Journal of Obstetrics and Gynecology*, December, 1945) reviews his personal experiences with utero-tubal insufflation as a therapeutic measure. Insufflation aids the sterile woman by establishing patency of the genital tract, by removing the cervical mucous plug, and by a manifold action in the tubes when mucosal adhesions can be separated, tortuous tubes straightened, mucous inspissations dislodged and adhesions actually separated, sometimes with rupture of the tube. He produces evidence of a ligated tube having been made patent by insufflation with subsequent pregnancy. For non-patent tubes the author considers repeated insufflation a therapeutic measure, and of 438 patients whose tubes showed increased patency on a second or third insufflation, 66 or 15.07% became pregnant. In 3,200 cases 590 women became pregnant following insufflation, and in 386 of the 590 cases this was the only therapeutic measure employed. Three hundred and seventy-eight pregnancies occurred within six months of the test, 108 within the second six months. Ninety-four patients subsequently encountered renewed difficulty in conceiving, relieved by insufflation. Rubin stresses the value of the kymograph in determining the efficacy of treatment.

Trichomoniasis.

K. J. KARNAKY (*The Western Journal of Surgery, Obstetrics and Gynecology*, February, 1946) discusses the incidence, pathogenicity, diagnosis and treatment of trichomoniasis. The incidence in his clinic as revealed by the examination of 2,173 consecutive repeated smears was 23.42%. Experiments of patho-

genicity showed that inoculation of a pure culture of *Trichomonas vaginalis* into trichomonas-free vaginas produced the signs and symptoms of *Trichomonas vaginalis* infection. There was a definite relationship between the disease and the bacterial flora in the vagina, the vaginal pH and glycogen in the vaginal secretion and epithelium. At pH values below 5.0 it was found that the trichomonads died. The author stresses the value of fresh saline solution suspensions with immediate microscopic examinations in the diagnosis of the disease, and states that discharge due to *Trichomonas vaginalis* was the only vaginal discharge observed in his clinic that scalded the external genitalia. In treatment the most efficient results were obtained by the use of floquin with vinegar douches, but the author admits there is no cure-all for this disease; for over twelve years he has used silver picrate insufflations and suppositories, ozonide of olive oil, "Vioform", sulphathiazole, β lactose, glucose, lactose, sucrose, saccharose, maltose, salicylic acid, "Carbazone" and many other substances.

Physiological Substrates in Sterility.

SAMUEL L. SIEGLER (*The American Journal of Obstetrics and Gynecology*, January, 1946) presents his experience in 106 cases of the fluid pathways in the female genital tract and their influence on sperm migration. He discusses the metabolism of human and animal spermatozoa and lays stress on the importance of anaerobic glycolysis in maintaining the viability of the sperms. A pre-coital douche of Ringer-glucose solution, used at the individual "fertile period" as determined by basal body temperature graphs, resulted in 29 pregnancies (28.3%) in the case of 106 couples in whom no signs of obstruction were present and in whom routine treatment had been unsuccessful. The author recommends further use of this method to provide additional sugar and isotonic electrolytes for stimulation of cellular metabolism and viability, to promote a propitious vaginal pH, to provide a favourable substrate for cervical mucus and semen and less abrupt metabolic shock for spermatozoa.

Dermoid Cyst of the Ovary.

WILLIAM J. BLACKWELL, MALCOLM B. DOCKERTY, JAMES C. MASSON AND ROBERT D. MUSSEY (*American Journal of Obstetrics and Gynecology*, February, 1946) have reviewed 225 consecutive dermoid cysts of the ovary removed by operation at the Mayo Clinic and have examined 100 consecutive tumours. There was an incidence of 5% among all ovarian tumours removed and 12.4% of the cysts were bilateral. Microscopic examination showed ectodermal derivatives to be present in 100% of the tumours, mesodermal derivatives in 93% and endodermal derivatives in 71%. It is suggested that as all embryonic layers may be represented, these cysts of the ovary should be regarded as teratomata and should be designated cystic teratomata to distinguish them from the solid teratomata. The authors suggest that the finding of these tumours during the reproductive life of women may well result from the active secretion from the glands lining the wall of the cyst as a result of stimulation at this period of the

patient's life. The reproductive function was found to be slightly, if at all, affected by the presence of the tumours, and there were no characteristic symptoms. The recognition by X-ray examination of a tumour of decreased density which is banded or mottled may increase appreciably the percentage of correct pre-operative diagnoses.

OBSTETRICS.

Pregnancy and Otosclerosis.

R. T. BARTON (*The New England Journal of Medicine*, October 11, 1945) has studied the effect of pregnancy on otosclerosis. The clinical material consisted of 133 otosclerotic women who had had one or more pregnancies. The author defines otosclerosis as a pathological process of unknown aetiology, in which new spongy bone is formed about the stapes and oval window so that progressive deafness results. The process is often unfavourably affected by pregnancy as well as by endocrine crises. Diminution of hearing may occur at any time in relation to pregnancy, even as long as six months after parturition. In the author's series 72% of the patients suffered hearing loss as a result of the first pregnancy, and 50% of patients had their hearing affected by subsequent pregnancies. The effect of pregnancy in any one case is entirely unpredictable; the same is true of abortion. The author gives three reasons why termination of pregnancy is never justified in the management of otosclerosis: (i) The effect of pregnancy on otosclerosis is variable, and there is no exact relation between the two conditions; the effect of previous pregnancies is not an accurate indication of the effect of subsequent pregnancies. (ii) The favourable effect of termination of pregnancy on otosclerosis is also inconstant. (iii) Otosclerosis does not endanger the life of the mother, as do the accepted indications for therapeutic abortion (tuberculosis, heart disease, toxæmia *et cetera*). The author also points out that deafness due to otosclerosis is no longer the severe handicap that it used to be, owing to the advent of the modern hearing aid and to the promise of surgical treatment. Sterilization and other eugenic measures are futile as an attempt to control otosclerosis, because the hereditary nature of the disease is not accurately known, and it is impossible to prophesy whether progeny will be affected; moreover, the effect of pregnancy on otosclerosis is not constant.

Management and Treatment of Late Toxæmia of Pregnancy.

S. A. COSGROVE AND LEON C. CHESLEY (*American Journal of Obstetrics and Gynecology*, January, 1946), on the basis of their work at the Margaret Hague Maternity Hospital, Jersey City, United States of America, suggest that the classification of the American Committee on Maternal Welfare, of toxæmias of pregnancy, should be accepted until further knowledge of the pathogenesis of these diseases is brought forward. They discuss the management and treatment of the late toxæmias on the basis of (a) prophylaxis, (b) treatment of symptoms encountered, (c) the termination of the

pregnancy, and present a method of treatment which in 1,625 cases of toxæmia over five years gave a maternal mortality of 1%, an incidence of abruption of the placenta of 3.8%, an incidence of eclampsia of 5.5%, an incidence of total foetal loss of 17.1%, and an incidence of remote permanent hypertension of 53%. They conclude that these figures can be improved by closer prenatal supervision, earlier recognition of toxæmias, increased hospitalization of pregnant women, the institution of bed rest and medical treatment in even mild cases, early interruption of pregnancy except in mild cases in which improvement is rapid, and the elimination of meddling midwifery.

The Behaviour of the Fœtus In Utero and Breech Presentation.

C. KEITH VARTAN (*The Journal of Obstetrics and Gynecology of the British Empire*, October, 1945) presents the results of his own personal observations of 1,000 breech presentations. He finds the "accommodation" and gravity theories to explain breech presentations unconvincing and presents nine postulates arising out of his work: (i) The incidence of breech presentation at the thirtieth week is high and at the appropriate stage is normal. (ii) In 60% of cases spontaneous cephalic version takes place generally once and once only. (iii) Spontaneous version is most often completed by the thirty-second week. (iv) Spontaneous cephalic version is only rarely followed by a reversion. (v) Spontaneous podalic version occurred 134 times in 3,875 patients (3.46%) and must be considered rare. (vi) External version has a higher reversion rate than spontaneous version, the reversion rate after external version is 22% and the tendency to revert falls off after the thirty-first week. (vii) Failed version is associated with definite clinical findings. In 20 of the 36 cases the attitude was extension, and in three cases very little liquor was present. (viii) Unheralded breech presentation at term cannot be eliminated. (ix) Extension, small amount of liquor, multiparity and prematurity are the real aetiological factors of breech presentation at term.

The Hazards of the First Few Days of Life.

ALFRED C. BECK (*American Journal of Obstetrics and Gynecology*, February, 1946) discusses the obstetrician's responsibility for the hazards of the first few days of an infant's life and makes special reference to anoxia and prematurity. After a review of infant and maternal mortality at the Long Island Cottage Hospital, he concludes that anoxia and prematurity were the commonest causes of neo-natal death. He discusses the intranasal administration of oxygen to the mother, the avoidance of excessive sedation, and termination of labour by low forceps and episiotomy and the use of local anaesthesia in most cases in which the fœtus is showing signs of anoxia. The harmful effect of respiratory stimulants should lead the paediatrician to be very cautious in their use in the presence of anoxia, and oxygen should be given to the fœtus intranasally after delivery. In the series of premature babies the mortality rate was 12.4%. The author attributes these results to

(a) adequate hygiene of pregnancy, (b) proper pre-natal advice, (c) immediate treatment of untoward symptoms, (d) early discovery and treatment of syphilis, (e) prevention of congestive failure in cardiac cases, (f) determination of size of the child by X-ray examination and consultation before the artificial interruption of pregnancy, (g) elimination of morphine, scopolamine, barbiturates and general anaesthesia in all premature labours, (h) the administration of vitamin K to the mother before the interruption of pregnancy and to all premature babies after birth, (i) preservation of the membranes as long as possible and routine episiotomy, (j) the spontaneous delivery of the second twin and avoidance of version and extraction, (k) postponement of the tying of the cord until it stops pulsating, (l) reception of the newly born premature baby in a tub of warm water. The author finds that breech delivery is the most dangerous, owing to the head being caught in the cervix. Spontaneous vertex delivery accompanied by episiotomy under local anaesthesia is the safest method of delivery for premature infants.

Blood Pressure of Relatives of Patients with Toxæmia of Late Pregnancy.

JOSEPHINE BARNES AND F. J. BROWNE (*The Journal of Obstetrics and Gynecology of the British Empire*, December, 1945) have recorded the blood pressure of 226 relatives of 129 patients who were admitted to hospital with pregnancy toxæmia. The controls were 66 relatives of 47 patients not suffering from toxæmia. Except in cases of essential hypertension and pregnancy, no differences were noticed in the pressures of control and toxæmic patient's relatives. The authors conclude that there is no evidence of an hereditary tendency to hypertension as a factor in the aetiology of toxæmia of pregnancy, except in cases of essential hypertension and pregnancy when the pregnancy should not be interrupted in maternal interests. Also patients with a familial history of hypertensive cardio-vascular disease should not be discouraged from having children except when, rarely, the disease occurs frequently and at an early age.

Diet Regulation and Controlled Weight in Pregnancy.

WILLIAM J. DIECKMAN, DOROTHEA F. TURNER AND BARBARA A. RUBY (*American Journal of Obstetrics and Gynecology*, December, 1945) advise caution in the interpretation of the results of nutrition surveys in pregnancy on a small series of cases. The effect of diet on maternal and foetal mortality, abortion, anaemia, hemorrhages, foetal anomalies and the size of the baby needs confirmation. At the Chicago Lying-In Hospital the increase in weight during pregnancy is restricted to seven to eight kilograms (15.4 to 17.6 pounds), which is regarded as ideal, by a suitable 1,800 Calorie diet. Increased requirements for lactation, over the needs for pregnancy, are met by including an additional pint of milk or equivalent, an additional serving of citrus fruit and two tablespoons of peanut butter or equivalent. The authors plan to evaluate the relation of diet to the incidence of toxæmia, anaemia and other factors previously mentioned, by an intensive study of a group of patients.

British Medical Association News.

NOTICE.

THE General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioners have been released from full-time duty with His Majesty's Forces and have resumed, or will resume, civil practice as from the dates mentioned:

Dr. K. W. Alexander, 16, Ormonde Parade, Hurstville (July 15, 1946).

Dr. K. Johns, 77, Turton Road, Waratah, New South Wales (July 1, 1946).

Dr. C. R. Cole, 80, Marsden Street, Parramatta (July 29, 1946).

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held on July 11, 1946, at the Children's Hospital, Carlton. Dr. ROBERT SOUTHALL, the Acting President, in the chair. Part of this report appeared in the issue of July 6, 1946.

Intracranial Hæmorrhage in the Newborn.

Dr. HENRY SINN discussed intracranial hæmorrhage in the newborn and showed a patient with the condition; he said that intraocular hæmorrhage, which had been announced as the subject on the agenda paper, was simply a minor episode in the patient's illness, but he wished to bring its occurrence to the notice of the society. Dr. Nancy Lewis had consented to discuss the subject of intraocular hæmorrhage more fully, as well as to show another patient with eye changes resulting from birth trauma.

Dr. Sinn went on to say that there were many reasons why he wished to bring this case under notice. One was to assess the significance of retinal hæmorrhage, and its relationship, if any, to the severity of intracranial damage. Dr. Nancy Lewis would give some idea of the frequency of its occurrence in normal and abnormal cases, and would possibly discuss the prognosis concerning subsequent visual defects in babies the subject of intraocular hæmorrhage. Another reason for presenting this patient was to make a plea for greater cooperation between the obstetrician and the pædiatrician. Dr. Sinn supposed that it was true to say that the latter knew little about prenatal and intranatal factors influencing the health of the baby, and it was equally true to say that the obstetrician frequently failed to follow up the results of abnormal labours, and so failed to learn from errors made or from the effect of imperfect technique. A round-table discussion on such matters as the part played by analgesics and anesthetics in *asphyxia neonatorum*, for example, would be of benefit to all concerned. One might ask whether it would be too much for the society to have on some future occasion a combined meeting with its colleagues at the Women's Hospital. A smaller point arising out of the case to be discussed was the value or danger associated with the procedure of lumbar puncture in babies suspected of intracranial damage. There were many authorities who believed that this procedure was risky and even dangerous to the child, but others equally convinced that it was beneficial as well as diagnostic. In the case under discussion lumbar puncture appeared to have been of life-saving value. Finally, Dr. Sinn asked for the views of other members of the society concerning the prognosis following intracranial hæmorrhage in the newborn in regard to life, mentality and other disorders. In spite of a most unfavourable outlook at the onset, the baby to be shown had progressed normally without any untoward incident. However, Dr. Sinn did not believe that this single case with such a happy result could serve as an example of what one might expect in such cases.

The history was that of a male child, aged fifteen months; he was born at term and weighed seven pounds two ounces. Although he was the firstborn and had presented by the breech, the medical attendant experienced no special difficulties in the delivery of the child. On the fourth day the baby's colour became ashen grey and his body became limp. A projectile type of vomiting set in, associated with constipation. If he was disturbed, the baby became restless and agitated. The next day twitching movements were observed in the left arm, which was undergoing alternating pronation and supination. Whilst the child was under

observation, a seizure occurred in which the arms were stretched upwards and the legs extended, and at the same time a reddish flush extended over the body and meconium was passed in large quantities. The movements in the left arm were noticeably worse after the seizure. The rectal temperature was 100.2° F. The heart rate was 120 per minute, and breathing was shallow, slow and irregular. The head circumference was fifteen inches. The fontanelle was bulging and the sutures were somewhat separated. The pupils were equal and moderately dilated, and reacted to light. A hæmorrhage had occurred into the right optic fundus. The abdomen was retracted and no mass was palpable. The baby reacted poorly to stimuli, and his condition left little cause for optimism. To verify the diagnosis of intracranial hæmorrhage, lumbar puncture was performed. The baby's condition was so poor that local anesthesia was unnecessary. The cerebro-spinal fluid was heavily blood-stained and under increased pressure. The opinion was expressed, rather rashly, that little hope could be held for the baby's recovery. However, much to everyone's surprise, his condition improved gradually from the time of lumbar puncture onwards. On the twelfth and nineteenth days lumbar puncture was repeated. On each occasion the fluid was blood-stained, but to a lesser degree, and under increased pressure. The cerebro-spinal fluid was examined again on the twenty-sixth day. On this occasion it was slightly xanthochromic only and was not under increased pressure. The baby had continued to flourish without changes of colour or seizures of any sort. There had been no difficulty with the feeding, and at the time of the meeting he weighed twenty-seven pounds, eight ounces, at the age of fifteen months. He had control of his head at three months, sat up at seven and a half months and crawled at ten months. He could stand with support at twelve months and was just about walking at fifteen months. No spasticity was present, and all limbs were used freely. The head was plagiocephalic and its maximum circumference was 17.25 inches. Hearing and speech were normal for the child's age. The sight of the right eye was uncertain; the mother said that she was convinced he could see if his left eye was closed over. Dr. Nancy Lewis had reported a patch of old chorioiditis in the right optic fundus.

Dr. NANCY LEWIS said that she had first examined the baby at the age of eight months. At that time he had a divergent squint of his right eye with defective vision and poor convergence. The left fundus was normal, and in the right a patch of chorio-retinal atrophy was present, situated away from the macula. Attempts to occlude his left eye resulted in the child's screaming and becoming upset, so that partial occlusion with atropine only was used for a few months followed by complete occlusion for part of the day. Owing to his mother's perseverance, the child's convergence was now fairly good, with his left eye covered he would grasp small objects.

Dr. Lewis went on to say that injuries at birth caused trauma to the eyes of the child in three ways: (i) by injury to the lids and eyeball, (ii) by intracranial injury to the visual tracts, to the nerves supplying the ocular muscles and to associated centres, (iii) by retinal and intraocular hæmorrhages. Injuries apart from retinal hæmorrhages were rare—estimated as three in 40,000 deliveries. Little work appeared to have been done in the following up of patients who had sustained retinal hæmorrhages at birth, although many observers had estimated the frequency of their occurrence. Richman said that they occurred in 12.2% of all babies, in 17.5% of firstborn infants, and in 20.6% of firstborn infants delivered with forceps. Juler examined 158 babies and gave the frequency as 15.5%. Another writer held that 40% of all babies were affected, but that in only 1% the injuries occurred at the macula or were associated with difficult labour. Paul found that hæmorrhages occurred in association with 50% of contracted pelvis, 40% of premature labours, 40% of protracted labours and 20% of normal deliveries. The association of intracranial hæmorrhage with retinal hæmorrhage was given by Cameron as 60% and by Fleming as 48%. All workers described the hæmorrhages to be of three types: (i) flame-shaped hæmorrhages, situated in the nerve-fibre layer—the most common; (ii) deeper round hæmorrhages; (iii) preretinal hæmorrhages appearing dark red and circumscribed. The hæmorrhages occurred at the posterior pole. Richman described one case in which they extended to the periphery, the most common distribution being that spreading out from the disk. The hæmorrhages disappeared quickly; the flame-shaped hæmorrhages were the quickest, being absorbed in one to four days, while preretinal hæmorrhages at the macula might remain for as long as fifteen days. Chorioidial hæmorrhages were rare.

With regard to the causation of retinal hæmorrhages, Dr. Lewis said there was general agreement that they must be due to intracranial pressure during birth causing congestion of the veins. In one series of cases nineteen babies who were delivered by Caesarean section before the onset of labour showed no hæmorrhages. Any condition which caused vascular congestion might burst the small, comparatively unsupported vessels. The condition was thought to depend on venous congestion in the central retinal vein induced through the cavernous sinus, which was subjected to increased intracranial pressure during birth, but would vary according to the freedom of anastomoses in the orbit between the central vein and venous channels other than the cavernous sinus (Juler). After the birth of the head, it was relieved from the pressure of the contracting uterus, and pressure on the undelivered portion of the baby caused intense intracranial congestion. Intraocular engorgement necessarily followed, and often retinal bleeding might occur. Other workers attributed the hæmorrhages to diapedesis from the veins, either in the course of slight asphyxiation, or because of the interval which existed between the cessation of the maternal circulation and the full action of the child's heart. Koenigstson considered that the hæmorrhages arose during the first act of respiration and were not due to pressure at birth. Dr. Lewis said that all had agreed that prematurity was a frequent accompaniment of retinal hæmorrhage. Usually delivery was rapid, on account of the smallness of the child, and another factor was increased fragility of the developing vessels in premature babies. Jacobs found that the coagulation time of the blood was normal in the series he investigated. English workers found the hæmorrhages to be more frequent in light-weight children; this was opposed to an American view that they were more frequent in the heavier children. The hæmorrhages had been attributed to trauma as the most important causative factor—for example, forceps delivery, breech presentation and difficult labours—and also to hæmorrhagic diathesis, immaturity, toxæmia, asphyxia and loops of cord around the neck causing venous compression. Eades found that delay in delivery after birth of the head, asphyxia, prolonged labour, early rupture of the membranes, increased pressure on the head by forceps or contracted pelvis did not increase the tendency to retinal hæmorrhage; high and mid forceps delivery did increase it.

Dr. Lewis said that during the past two weeks, with the permission of the honorary pediatrician of the Women's Hospital, Dr. Kate Campbell, she had examined 74 newborn babies' eyes at the hospital to obtain a rough estimation of the frequency of retinal hæmorrhages. All the babies were examined within the first twenty-four hours, after the instillation into their eyes of atropine sulphate drops (1%). Of these 74 babies, ten were found to have intraocular hæmorrhages. The hæmorrhages were mainly superficial and flame-shaped, and many extended along the larger veins, giving the appearance, as has been suggested, of diapedesis from the veins. In others small circular hæmorrhages were present, but Dr. Lewis did not see any preretinal hæmorrhages. Of the ten babies with hæmorrhages, in one a hyphæmia and vitreous hæmorrhage of one eye were present, whilst the other eye appeared normal. The baby was big, weighing nine pounds six ounces, the child of a *primipara*, and had been delivered by forceps after a manual rotation for deep transverse arrest in the pelvis. Probably this hæmorrhage was caused by a direct injury—the lower ocular conjunctiva also contained numerous subconjunctival hæmorrhages—although Stumpf had described a case associated with severe asphyxia in which the anterior chamber and vitreous were filled with blood. The other nine babies had retinal hæmorrhages only; in four they were profuse and bilateral; the other five had small hæmorrhages, and these would not be likely to cause any later interference with vision. One was born before the mother's admission to hospital, labour being of one and three-quarter hours' duration. Two babies were born after artificial rupture of the membranes. The mothers of two babies were admitted "head on perineum", and in one of these cases the membranes had ruptured early. (Four other babies whose mothers were admitted to hospital "head on perineum" had normal fundi.) One baby was the offspring of a *primipara* who suffered from preeclampsia, though delivery was normal. One was the second baby of a mother whose only abnormality was slight oedema of the feet, delivery being normal. One baby was born to a *multipara* with delayed second stage of labour, the baby's birth weight being nine pounds nine ounces. The last baby was born after a normal delivery and weighed six pounds ten ounces. The babies' birth weights varied between six pounds two ounces and nine pounds nine ounces. The series included ten cases of toxæmia, in two of which hæmorrhages had been

caused. Eleven deliveries were by forceps, only one having resulted in hæmorrhage from direct injury. In four cases artificial rupture of the membranes had been performed, two being associated with intraocular hæmorrhages in the infant; and in one case of early rupture of the membranes, intraocular hæmorrhages had been caused in the baby. Stumpf described early rupture of the membranes as an ætiological factor in retinal hæmorrhages, but Juler excluded this in his series. In one case of breech delivery, the fundi of the offspring were normal. In three cases of failed trial of labour for disproportion, in which delivery was effected by lower uterine segment Caesarean section, the babies had normal fundi. There were no proved cases of hæmorrhagic diathesis. One baby examined died of cerebral hæmorrhage. The baby weighed eight pounds. The mother was a *multipara*, the pregnancy was associated with hydramnios, and the head was not fixed until the membranes ruptured, after which the baby was rapidly born. The child was difficult to revive, bright blood was expelled from his nose and mouth and he was extremely cyanosed and cold. In spite of the extreme cyanosis, the only signs in the fundi were grossly congested veins with no retinal hæmorrhages. The child died after fifteen hours, and post-mortem examination revealed bilateral adrenal hæmorrhages; hæmorrhage had also occurred into the stomach, and the bladder contained blood-stained urine. There was a left-sided tentorial tear with cerebral hæmorrhage. Sections were cut from the eyes, under the direction of Dr. R. H. Orton, and some subretinal exudate was found, with extreme congestion of the ciliary region and some congestion of the choroid. No retinal hæmorrhages were present in either eye. The case was of extreme interest, in that four of the suggested ætiological causes of retinal hæmorrhages were present—extreme cyanosis, rapid delivery, compression of the head sufficient to cause cerebral hæmorrhage and possible hæmorrhagic disease—without the occurrence of any retinal hæmorrhage. In the series there were 30 *primiparae*, three of the babies having hæmorrhages, and 44 *multiparae*, seven of the babies having hæmorrhages. The series was far too small to allow the drawing of conclusions as to any ætiological factor in retinal hæmorrhage, except that low forceps delivery as a cause could probably be excluded.

Dr. Lewis concluded by saying that no cases appeared to have been followed up to discover whether the retinal hæmorrhages led to any permanent disability. It was suggested that they might be the cause of congenital amblyopia, amblyopia in a squinting eye, congenital nystagmus or degenerative changes at the macula of obscure origin. The frequency of the hæmorrhages and the persistence of the dense circular hæmorrhages at the macula suggested to those who had observed them that here might be a cause of defective macular vision. The resulting changes might vary from chorio-retinal atrophy to no visible lesion. A leading English obstetrician concluded a similar discussion by saying that while intraocular hæmorrhages occurred in 12% of normal births, most of them cleared up, and for the rest nothing could be done; thus he presumed it unnecessary to examine the fundi of all children born.

DR. KATE CAMPBELL congratulated Dr. Sinn on the good result obtained. She thought it unusual that the infant showed no symptoms till the fourth day, and suggested that the hæmorrhage might have been a manifestation of hæmorrhagic disease of the newborn occurring within the skull rather than in the usual alimentary site. Dr. Sinn had asked for expressions of opinion as to the advisability of lumbar puncture in the case of newborn infants showing cerebral symptoms. Dr. Campbell emphasized the importance of lumbar puncture in any such case. Many babies with symptoms of increased intracranial pressure, which clinically simulated hæmorrhage, would be found on lumbar puncture to have crystal-clear cerebro-spinal fluid under tension, often tremendously increased. In one such case she had had to remove twenty millilitres of fluid before the pressure dropped to normal. She thought in these cases that the relief of tension was life-saving. Sometimes the lumbar puncture had to be repeated. This condition, sometimes rather misleadingly referred to as "acute external hydrocephalus", was probably due to anoxæmia, the sequence of events being, firstly, congestion of the organs due to loss of tone of the capillary walls, then later spilling of the wall with transudation of fluid. This occurred in all organs, and the brain shared in the general condition. Post-mortem examination of such patients revealed a great increase in cerebro-spinal fluid and a rather oedematous brain. It was Dr. Campbell's impression that in cases of intracranial hæmorrhage the outlook was hazardous, but in the "acute external hydrocephalus" type the results were favourable, except when the child was post-mature.

Dr. L. WAIT said a good article on intracranial hæmorrhage could be found in a recent issue of *The Journal of Obstetrics and Gynaecology of the British Empire*. One was struck by the variation in the amount of blood found in the cerebro-spinal fluid—from a few red blood cells to frank hæmorrhage. Obstetric trauma was not the only factor in these cases. Lumbar puncture should be performed and if necessary repeated.

Dr. G. SPRINGTHORPE congratulated Dr. Sinn on his suggestion for the holding of a combined meeting of obstetricians and pædiatrics to resolve such questions as had been raised. An excellent article could be found in "Recent Advances in Pediatrics" on the dangers to which the newborn were subjected. Another article on the subject, by the Edinburgh school, appeared in a recent issue of *Archives of Disease in Childhood*.

Dr. R. SOUTHEY said that, with regard to prognosis, the babies who recovered were the lucky ones, even if repeated lumbar punctures were carried out. Following gross hæmorrhages, sequelæ might be serious. Combined meetings had been held previously with the staffs of both the Women's Hospital and the Queen Victoria Hospital. The idea was a good one, and he would convey Dr. Sinn's suggestion to the executive of the society. The first indications of intracranial hæmorrhage were often disinclination to suck and pyrexia. The obstetrician came in for more obloquy than he deserved in these cases. It was better not to refer to them as "birth injuries". Many occur red as a result of prematurity, toxæmia, and other factors outside the control of the obstetrician.

Dr. Sinn, in reply, thanked the various speakers for contributing to the discussion, and particularly Dr. Lewis for the immense amount of work she had put into her study of retinal hæmorrhage. Anyone who had tried to look at the fund of one newborn baby would be astonished to hear that Dr. Lewis had examined over 70 babies. The résumé of the relevant literature as well as her own findings would be of real help when this question arose in the future. Dr. Sinn said that if the possibility of holding a combined meeting of obstetricians and pædiatrics was enhanced as a result of this discussion, he would feel compensated for any efforts he had put into its preparation.

(To be continued.)

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 117, of June 27, 1946.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The appointments of the following officers are terminated on demobilization with effect from the dates indicated: (Temporary Squadron Leaders) H. J. Prior (261290), 5th January, 1946, V. R. Meek (261662), 10th January, 1946, J. A. Horan (252570), 23rd January, 1946, (Temporary Flight Lieutenants) I. D. R. Gardiner (276408), 8th January, 1946, D. A. Brown (264262), 22nd January, 1946, (Temporary Squadron Leaders) R. C. Gill (261482), 28th March, 1946, A. R. Robinson (263475), 29th March, 1946, (Temporary Flight Lieutenants) F. H. Read (263891), 27th March, 1946, A. K. Smith (267110), 29th March, 1946, Temporary Squadron Leader J. N. Sevier (263442), 15th March, 1946, Temporary Flight Lieutenant L. A. Commins (264588), 21st March, 1946, Flying Officer M. MacA. H. Wallace (139886), 20th March, 1946, (Temporary Squadron Leaders) F. J. McCoy (253474), 25th March, 1946, S. F. McR. Yeates (272046), 1st April, 1946, H. G. Allen (1670) (Part-Time), 4th April, 1946, (Temporary Flight Lieutenants) A. L. Hare (254419), G. Sutherland (256391), 29th March, 1946, C. R. Laing (253407), G. A. Robble (256868), 2nd April, 1946, (Temporary Squadron Leaders) A. K. McIntyre (262064), 5th March, 1946, C. H. Anderson (261975), 6th March, 1946, D. G. Hamilton (263719), 8th March, 1946, Temporary Flight Lieutenant F. K. Bartlett (265167), 1st March, 1946, Flying Officer, Acting Flight Lieutenant M. E. Griffiths (423105), 18th February, 1946, Temporary Squadron Leader, Acting Wing Commander N. W. Martin (272869), 7th March, 1946, (Temporary Flight Lieutenants) O. W. Bowering (285170), 21st February, 1946, W. G. Norman (283250), 5th March, 1946, Temporary Squadron Leader J. M. Moyes (261802), 18th April, 1946,

(Temporary Flight Lieutenants) A. B. Yulle (267346), 4th April, 1946, J. R. Wadsworth (267086), 10th April, 1946, Temporary Wing Commander F. R. Wicks (281655), 29th April, 1946, (Flight Lieutenants) K. C. Porter (287404), 24th April, 1946, W. W. Rail (255174), 26th April, 1946, Temporary Wing Commander R. W. D. Fisher (251203), 12th April, 1946, (Temporary Squadron Leaders) A. G. R. Uglov (251196), 11th April, 1946, J. R. McCoy (253345), 15th April, 1946, (Temporary Flight Lieutenants) E. Goodman (257532), 4th April, 1946, J. A. Conquest (267263), 10th April, 1946, W. B. Stafford (257510), 12th April, 1946, J. K. D. MacKenzie (5910) (Part-Time), 9th October, 1945, Temporary Squadron Leader E. D. M. Ryan (253343), 29th April, 1946, Temporary Flight Lieutenant A. J. Gumley (287424), 16th April, 1946, Temporary Squadron Leader V. J. Odium (283222), 3rd May, 1946, Temporary Flight Lieutenant, Acting Squadron Leader N. F. Pescott (255177), 29th April, 1946, (Temporary Flight Lieutenants) W. MacL. Davies (256407), 30th April, 1946, J. D. Whiteside (256812), 2nd May, 1946, C. S. Kerr (285947), 7th May, 1946.

The appointments of the following Temporary Flight Lieutenants are terminated on demobilization with effect from the dates indicated: J. A. Kennedy (5194) (Part-Time), 23rd June, 1945, G. F. Salter (253256), 8th March, 1946.

The appointment of Temporary Flight Lieutenant R. E. Hearn (296390) is terminated on demobilization with effect from 15th April, 1946.

The notification of the transfer of Flight Lieutenant L. Kowadlo (257662) from the Reserve to the Active Force for full-time duties appearing in *Commonwealth of Australia Gazette* No. 18, dated 31st January, 1946, is amended to read with effect from the 26th August, 1945.

The appointment of Temporary Flight Lieutenant W. A. Hillman (263735) is terminated on demobilization with effect from 12th April, 1946.

The appointments of the following Temporary Flight Lieutenants are terminated on demobilization with effect from 1st May, 1946: C. B. Colvin (267224), J. W. P. Henderson (277272).

Flight Lieutenant S. Dimant, M.B., B.S. (257632), is transferred from the Reserve to the Active Force for full-time duties with effect from the 9th April, 1944.—(Ex. Min. No. 184—Approved 19th June, 1946.)

The appointment of Temporary Wing Commander I. H. Cumming (251214) is terminated on demobilization with effect from 16th May, 1946.

Reserve: Medical Branch.

Edley Hector Anderson (1177) is appointed to a commission with the temporary rank of Wing Commander with effect from 12th March, 1946.—(Ex. Min. No. 162—Approved 29th May, 1946.)

The appointments of the following officers are terminated with effect from 9th October, 1945: Squadron Leader R. J. Aitchison (1452), Flight Lieutenant R. M. Buntine (1191).—(Ex. Min. No. 183—Approved 19th June, 1946.)

Correspondence.

SPINAL ANÆSTHESIA AND CHLOROFORM: A COMPARISON OF MORTALITY.

SIR: When shorn of its prolixities, its innuendoes and its misrepresentations, Dr. Corlette's letter in your issue of June 22 contributes nothing of significance to the controversy about the above subject. Perhaps it is something to have stung him into a spirited defence of his inadequate case, but one would have preferred a more reasonable and inquiring attitude, tempered with due scientific humility.

Dr. Corlette fails effectually to answer any of the criticisms of his article which were contained in my first letter, although he deals savagely with Dr. Thomas, who expressed views in many respects similar to my own. Apparently your author himself does not like questioners, sceptics *et cetera*. Nor does he appear to like those egregious idiots who have the temerity to get good results with the method he so violently condemns.

For Dr. Corlette's information (and enlightenment) I would state that the method of spinal anaesthesia now current here almost invariably employs gravitational control of the injected solution, together with the efficient application of vasopressor drugs to sustain the blood pressure. The latter agents (ephedrine, "Neo-Synephrine" *et cetera*), utilized for this purpose only within the past fifteen years, have revolutionized the application of spinal anaesthesia as regards

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both its safety and its scope. In addition, a much improved conception of the applicability of spinal anaesthesia has emerged in this time. Formerly it was frequently selected for the bad risk cases, often with disastrous consequences, as all except two of the reports quoted by Dr. Corlette so amply indicate. Spinal analgesia is now recognized as being more suitable for the husky, healthy, difficult types of patient. Subject to suitable precautions, however (for example, control of ascent, serial blood pressure readings, use of vasopressors and oxygen), it may be applied in cases of doubtful and even poor tolerance with almost absolute safety. With these safeguards it is immaterial whether the method used be a "single dose" or "continuous" one; the former is generally preferred in this country. Dr. Corlette's ponderous ridicule on this point is an argument based either on ignorance or on a wish deliberately to confuse the issue.

It is astonishing that a surgeon of the standing and experience of Dr. Corlette should be at such pains to discount the value of skill in the use of anaesthesia, whether general or spinal. This is an incomprehensible absurdity, which any informed person will reject with the contempt it deserves. Skill in spinal analgesia is not merely the ability to perform lumbar puncture with dexterity; it means competence in all respects, involving intelligence, judgement, experience, training, good technique, adequate facilities, observation, and action appropriate to the varying circumstances. It is ludicrous for him to harp on the sad confessions of the unhappy Myra Babcock, who for all we know may have been the victim of that peculiar American practice whereby nurses give a large proportion of the anaesthetics, even if under surgical direction and supervision. Her dreadful admission of a 1:75 immediate mortality rate indicates a gross lack of either knowledge or facilities.

The futility of Dr. Corlette's reliance on mere figures in reaching his damning conclusions is emphasized by the realization that when only a single factor is under review at least 100,000 cases must be included to give an even approximately correct result. When many factors are involved, as they are in this discussion, perhaps ten times as many case reports must be so analysed if accurate conclusions are desired. For instance, Dr. Corlette in his argument quite ignores the profoundly differing significance of low or high spinal anaesthesia in relation to the question of risk.

Dr. Corlette distorts my reference to the fallacy of arguing from the particular to the general. Far from tossing it aside, I acknowledge its force, but do urge his attention to the fact that his own material is essentially of a particular nature, in that its derivation and scope is so limited. It is patently absurd for him to claim that it is a fully representative, comprehensive, over-all survey. He rightly rejects individual reports *per se*, but does he not realize that comprehensive surveys are an aggregate of such personal experiences? In justice to him we must admit that, so far as his quoted figures go, he has made out a case, but, of course, he has not gone nearly far enough. Therefore his contribution is valueless, misleading and disturbing to the public mind, but I suppose that one must congratulate him on the interest that the sensational Press has already taken in his startling conclusions.

We respect the self-styled prophet, and admire his researches among the back numbers. Dr. Corlette says he wants the truth. The truth is that spinal analgesia is no plaything for tiros, and that if any adequate assessment of its risks is desired a really comprehensive survey must be made.

Yours, etc.,

S. V. MARSHALL.

Harley,
143, Macquarie Street,
Sydney.
July 6, 1946.

SOME COMPLICATIONS AND SEQUELÆ OF THE PROPHYLACTIC INOCULATIONS.

SIR: Dr. Kelly's "Some Complications and Sequelæ of the Prophylactic Inoculations", June 8, 1946, has done a service in presenting such a complete picture of the various clinical phenomena following common prophylactic inoculations. He raises many controversial points—some theoretical, some practical. Anaphylactic reactions, he states, may be immediate (syncope) or be delayed up to twenty-four days. Serum sickness (urticaria, oedema, fibrositis, neuritis *et cetera*) is delayed to between three and twenty-four days.

Regarding the mechanism of anaphylaxis, he seems to favour Kojis's theory that it is the same as that of serum sickness, but points out that clinically "the differences appear to be greater than the similarities". Clinically I have observed two cases in the last year lending support to

Kojis's theory, or illustrating serum sickness type reactions coming on hours, not days, after the injection.

Case I was that of a girl, aged four, to whom I gave 500 units of "A.T.S.". Seen two hours later, her face was swollen out of recognition, her body and limbs covered with large weals, and she was frantic with irritation, accepted early symptoms of anaphylaxis such as collapse, tachycardia, asthma were absent. She had walked back with her mother half a mile for treatment. Adrenaline subcutaneously stopped irritation, and the oedema subsided next day.

Case II was interesting, as both types of reactions quickly followed one another. I had given an old lady of seventy-four her usual dose of two cubic centimetres of "Anahæmin", and was present ten minutes later when she stopped talking suddenly and collapsed. I thought at first that she was dead, but she came round gradually on being pulled from her armchair to the floor. She was excited and anxious and I stayed an hour. She said that she had often fainted, but this was different. After a faint she could always remember slipping away with whirling in her ears in the early stage, but she remembered nothing on this occasion.

An hour later I was called back hurriedly because she was choking. Her eyelids and tongue were grossly swollen, her body and limbs covered with intensely irritating large weals, for example, a typical serum reaction. Between these stages she had recovered completely. As her tongue began to swell her dentures were pushed out of her mouth. Her mind was clear, and while articulation was possible, she was able to give concise instructions as to the disposal of personal effects not covered in her will. On my arrival she was in great distress and a tracheotomy seemed essential, but with small repeated doses of one minim of adrenaline intramuscularly her tongue gradually recovered to comfortable size in an hour.

In this latter case it seems unnecessary to look for two different mechanisms for the anaphylactic and serum sickness type reactions. The "Anahæmin" ampoule was the last of a box of three. No previous injection had produced any reaction, although she was in craven fear each time she had one. She had, however, had a tiring anxious week, which was reflected in her appearance and on examination before the injection.

My own opinion is that she would not have reacted in this way had some chemical balance not been upset by a week of anxiety. Sustained anxiety seems to be necessary as distinct from a temporary fear. The 2% to 3% of soldiers who "pass out" on receiving a prophylactic injection have no counterpart in civilian life. A medical officer of health informs me he has given nearly four thousand injections against diphtheria and whooping cough in the last five years with only one case of fainting. In these pre-school and school children temporary fear is dominant.

Soldiers in wartime, whether aware of it or not, live in a chronic state of suppressed anxiety. This would appear to upset some adrenal-like balance making them allergic or sensitive to parenteral injections in a manner comparable to Case II. We know that sudden fear causes an outpouring of adrenaline, so we can imagine that milder states long continued may exhaust the suprarenals and produce a potentially allergic state. If the body has not used up its own supply of adrenaline, why should we inject it and why should it produce such dramatic relief?

In favour of the theory of long-continued anxiety rendering a person allergic we have the common examples—asthma, bilious attacks, migraine, hay fever *et cetera*. This leads one on to wonder whether intensive courses of the longer acting ephedrine would modify the progress of the case of fibrositis and neuritis mentioned by Dr. Kelly. He gives cases of fibrositis and neuritis in army personnel who were ill for months. If proportionate figures existed in civilian life doctors would soon be involved in costly damages and litigation.

To change now to the role of hypersensitivity in *periarteritis nodosa*, I would like to mention a case where this condition was found *post mortem*. He was a healthy male, aged forty-two, who had double ligation of saphenous veins with injection back of about twenty cubic centimetres of 50% hypertonic saline. The case was complicated by a painful phlebitis of the left vein with suppuration at the incision. He was vaguely ill for two months, and after three months died.

And of delayed anaphylactic reactions, let me quote a case seen several months ago. A girl, aged nine, had had, in error, at 12 o'clock an intradermal skin sensitivity test for diphtheria (two minims) of a one in twenty dilution. She had been immunized against diphtheria three years before. No symptoms appeared till ten hours later when she woke from sleep feeling sick and excited. On examination she had a normal temperature, but an alarming tachycardia, respira-

tions thirty. Fine to gross tremors kept her continually twitching. She had been asleep on her left side and some oedema of lung was present below axilla.

Leaving the needle in, I gave her minim doses of adrenaline up to five minims at five-minute intervals. This was fruitless. An hour later oedema had spread to both bases and I expected her to die. She had one bowel action. She recovered gradually, however, without further treatment and was quite well next day.

What treatment should have been given?

Yours, etc.,

LEO J. GURRY, M.B., Ch.B. (Edin.).

23, Douglas Parade,
Williamstown, W.16,
Victoria.

July 1, 1946.

THE REHABILITATION OF WAR NEUROTICS.

SIR: Following the delivery of two interesting papers on the above subject at a meeting of the New South Wales Branch on April 26 last, there was a discussion which was reported in THE MEDICAL JOURNAL OF AUSTRALIA of June 29, page 926 *et sequentes*.

Dr. Basil Williams made some very caustic and regrettable comments about the medical personnel who examined soldiers prior to enlistment. Dr. Williams does not specify whether he means psychiatry examination or physical, or both. He states that "the problem [of rehabilitation] was made large because the people were not examined properly when they were taken into the army. . . . The men who examined them were not qualified, not taught; some had been retired for many years and were out of touch with medicine altogether".

As one of the many senior practitioners who has been associated with the duty of examining recruits, and since then in sitting on medical boards, I resent Dr. Williams's derogatory remarks. Those senior men responded to the country's need at that time when all practitioners were asked to do what they could to help the authorities, and even highly qualified and experienced practitioners came willingly out of retirement to assist. It ill becomes a comparatively young practitioner to pass such strictures.

As regards the physical examination, the army laid down rigid standards which were adhered to. As regards the summing up of the man's mental make-up, in the absence of or denial of a history as to fits and of any mental trouble or nervous breakdown in his own or family history, I am certain that an experienced practitioner of many years' standing is the best judge.

As to the background of temperament, personality and character (to use Dr. Hastings Willis's apt terms), only time will discover how those attributes affect a man when his environment is suddenly altered by transference from a regular civilian occupation and home to the machine of army life and adjusting himself to be one of a unit.

Yours, etc.,

T. W. LIPSCOMB.

Sydney,
July 8, 1946.

BACKACHE IN SOLDIERS.

SIR: Captain Stuckey (THE MEDICAL JOURNAL OF AUSTRALIA, June 15, 1946) is to be congratulated upon the care with which he examines his patients and records his findings. He attempts to make an anatomical diagnosis before making a pathological one—that is, he asks, "Where is the lesion?" before asking "What is the lesion?". This method is scientifically sound, but I would agree to differ entirely from his answers to these questions.

For example, in Cases VIII, XII and XV the patient is stated to feel pain when he flexes to the right, and it is inferred that the pain arises in the right sacrospinalis. Here I disagree. Obviously the pain is not due to stretching of the right sacrospinalis. Further, the pain cannot be due to contraction of the right sacrospinalis. When a patient flexes to the right (it is stated on page 838 that he is examined in the standing position), the movement is only initiated by contraction of the right sacrospinalis. As soon as the first few degrees of the movement have been performed the right sacrospinalis relaxes and the left contracts to prevent the patient from toppling over. The relaxation of the right and the contraction of the left sacrospinalis can easily be felt. Further lateral flexion is then carried out by gravity and by gradual relaxation of the left sacrospinalis

(Wood Jones's action of paradox). The pain does not occur at the very initiation of lateral flexion, but with a greater degree of lateral flexion, that is, the pain occurs when the muscle is relaxed. The pain which the patient experiences when he flexes to the right cannot therefore be due to contraction of the right sacrospinalis.

As the pain is due neither to stretching of nor to contraction of the right sacrospinalis, there are no reasons for assuming, as Captain Stuckey has done, that the pain originates in that muscle and a diagnosis of fibrosis of the right sacrospinalis cannot explain the symptoms.

Similar reasoning can be applied to other cases mentioned in the paper.

Captain Stuckey has fallen into the same error as did Sir William Gowers. Gowers stated that in lumbago the pain only occurred on stretching or on contraction of the muscles, and he therefore inferred that the pain was muscular in origin. His statement that the pain only occurred on stretching or on contraction of the muscle does not bear critical analysis and would not have been made if he had known of the action of paradox and his inference that the pain was muscular in origin was thus based upon false reasoning. It was upon this and other false reasoning that Gowers introduced the term fibrositis into medicine.

An important principle thus emerges from a consideration of the above facts, namely, that when a patient suffering from pain in the back (or neck) complains of pain on the side towards which he flexes, or of pain on extension, he is not suffering from a muscular lesion. Such pain can be explained by a disk lesion and is usually due to such a cause.

Yours, etc.,

131, North Beach Road,
Mount Hawthorn,
Western Australia.

July 4, 1946.

JAMES H. YOUNG.

CONGENITAL FIBROCYSTIC DISEASE OF THE PANCREAS.

SIR: I have read with interest the article on "fibrocystic disease of the pancreas" by Dr. Blaubaum in your issue of June 15, 1946. The name fibrocystic disease is not a satisfactory one for the condition described. A number of Americans themselves have criticized this nomenclature. There are no true cysts, although the lumina of the ducts and acini are markedly dilated and distorted. Dr. Blaubaum gives a rather misleading description of the stools in this condition. In none of the articles in the American literature that I have seen has there been an adequate description of the stools, the authors contenting themselves with noting the occurrence of "diarrhoea". In my experience the stools are quite distinctive and do not resemble those of celiac disease. The appearance of the stool is pale creamy yellow or pale yellowish green. It is homogeneous, glistening and usually has a rancid odour. When the baby is having a high protein diet with little fat the odour may be putrefactive. Liquid fat is frequently passed with or between the bowel actions. The passing of this liquid fat (the so-called "butterstool" which solidifies on cooling) may be missed if not looked for, especially if the baby passes the stool into the napkin. The large size of the stool is also a characteristic feature. If the baby is having four or five stools in the day some may be small, but the total amount of faeces in the twenty-four hours is abnormally large. One baby with congenital pancreatic steatorrhoea was brought to me with the single complaint of the large size of the stools.

The examination of the stools for fat gives valuable information. Microscopically numerous fat globules are present with few fatty acid crystals and soap plaques. In some cases none of the latter are present. The total fat of the stool is high, and in a large number of my patients there has been an abnormally large amount of unsplit fat, although this is not always so. In six of the eight cases reported the percentage of total fat that was unsplit varied from fifty-nine to eighty-two. In the remaining two the unsplit fat was 12% and 3.3% of the total fat. In both these latter two patients the diagnosis of congenital pancreatic steatorrhoea was confirmed *post mortem*.

Dr. Blaubaum does not mention the familial occurrence of congenital pancreatic steatorrhoea, but it is a very marked feature. In one family of five children I found that four were affected and one was normal. On the other hand there may be only one child affected in a family of several children. I was interested in Dr. Blaubaum's results of the examination of duodenal juice for tryptic activity.

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My experience leads me to believe that such examinations are not necessary for diagnosis. The diagnosis can be made by careful investigation of the child's clinical condition and by examination of the stools, particularly by personal inspection, and by examination of the stool for fat.

The cough is rarely present in the neonatal period, and if the diagnosis is made early and treatment by diet begun and maintained, it may not appear until the final fatal episode at three or four years of age. In my series of forty cases the diagnosis was made within the first twelve months—in a few cases in the neonatal period. My experience has been that if the diagnosis is made before the onset of respiratory infection it is possible to keep these children well and to all appearance normal in nutritional state for three or four years. I have had two patients in whom the diagnosis was made within the first year who survived to the respective ages of seven years and ten months and nine years and nine months. Both these children had long periods of illness from respiratory infection before death.

The ultimate prognosis remains, in the meantime, hopeless. There is no satisfactory substitute for the pancreatic secretion at present. Even in America those who have reported on this condition do not appear to feel that the present preparations are satisfactory, although they may use them. The use of the term "celiac syndrome" by Dorothy Andersen in America seems to have introduced a good deal of confusion in that country and elsewhere. Dr. Blaubaum says: "Celiac symptoms may appear only after the age of eighteen months or two years, although respiratory symptoms may have been present from birth." It is not clear what is meant by this statement. In the child over a year old there may be attacks of loose stools during a digestive upset, and these stools may have some resemblance to those which occur in celiac disease. The usual stool which even the older child passes does not resemble those of celiac disease.

Yours, etc.,

MARGARET H. HARPER.

British Medical Association House,
135-137, Macquarie Street,
Sydney.
July 8, 1946.

SIR: Having recently been responsible for an article in your journal on celiac disease, I feel I should make some reference to the letter in the issue of June 29 last under the title "Congenital Fibrocystic Disease of the Pancreas".

Fibrocystic disease of the pancreas, as described by Andersen, is not to be confused with congenital steatorrhea, an entirely different entity. This disease is described by Garrod, Batten, Thurstfield and Patterson, and by Garrod and Hurlley, I believe originally.

Yours, etc.,

G. E. M. SCOTT.

32, Collins Street,
Melbourne, C.1,
July 9, 1946.

Bibliography.

Hugh Thurstfield and Donald Patterson: "Diseases of Children", London, 1943.
A. E. Garrod and W. H. Hurlley: "Congenital Family Steatorrhea", *The Quarterly Journal of Medicine*, Volume VI, 1912-1913, page 242.

BACILLE CALMETTE GUÉRIN.

SIR: Having read Dr. Murphy's letter in the issue of your journal of June 29, I should like to record my own experience concerning the tubercle bacillus known as "B.C.G."

I have a reputable strain of this organism imported from England, and I also have a young science graduate working with it and the vole strain of tubercle bacillus. In this work no unusual features present themselves to a bacteriologist, so that special training abroad is unnecessary. Moreover, cultures of "B.C.G." and other tubercle bacilli may be maintained in a state of unaltered virulence (or avirulence as the case may be) and viability for months by freeze drying *in vacuo*. There is, therefore, no difficulty in transport of these cultures. Moreover, I had no trouble with the "authorities" over the importation of this microorganism nor of any other microorganism.

Yours, etc.,

NANCY ATKINSON, Bacteriologist.

Institute of Medical and Veterinary Science,
Adelaide,
July 12, 1946.

Obituary.

HAROLD WHITRIDGE DAVIES.

THE following appreciation of the late Professor Harold Whitridge Davies has been sent by Professor W. S. Dawson.

Those who served under Lieutenant-Colonel H. W. Davies in the 9th Field Ambulance during 1939-1942 mourn the passing of a keen but kindly commanding officer. "Pete", as he was known to his friends and to members of his unit, was never happier than when he was in the field. For years he had spent much of his spare time exploring areas round Sydney of strategic importance, and while not blind to the beauties of nature his eyes were ever directed to military features of the landscape. His week-ends were usually spent in traversing George's River district on that capricious quadruped "Sally". When his light shone into the small hours in his hut at Ingleburn Camp we knew that a tactical scheme was in the making and that we could expect that hasty summons to scribble for our lives his operation orders, though often the code words became sadly distorted in the process. And so another bivouac set out, not a mere picnic, but a real exercise in the duties of a field unit. And invariably rank and file returned wiser and more experienced in improvisation, field craft and military sense. Not that the parade ground training of successive batches of recruits was neglected. But "Pete" was obviously happiest in the field, and one suspected that field work, including his expedition to Central Australia, appealed to him more than the university class room. The training which officers and men received under him had, we may be sure, far-reaching effects and bore good fruit in battle fields remote from Ingleburn.

Professor Davies was awarded the Efficiency Decoration early in 1941. It was a bitter disappointment to him that he was not selected to go overseas and that he had to return to his university work before the end of the war. His eloquent and moving tribute to the graduands lost on the *Robin May* just over a year ago revealed his intense humanity. Vale, "Pete".

KEITH CHISHOLM ROSS.

THE following appreciation of the late Dr. Keith Chisholm Ross has been received from a correspondent.

Keith Chisholm Ross, M.B., Ch.B. (University of Melbourne), died at the Heidelberg Military Hospital on February 3, 1946. He was a son of the late Dr. W. Chisholm Ross, of Dimboola. He was only forty-eight, and had been practising for ten years in Geelong, in partnership with Dr. McPhee. However, four and a half years of that time had been spent with the Australian forces in the Middle East and New Guinea. He had a distinguished university career, and was runner-up for a Rhodes Scholarship. Previous to this he served as a private in the Australian Imperial Force in the first World War, and was wounded in France shortly before the armistice. He lost his only brother at Gallipoli. He became registrar at the Melbourne Hospital, and afterwards superintendent. He went to New Guinea as lieutenant-colonel with the Second/Ninth Australian General Hospital, acting as surgeon. That hospital did pioneering work in New Guinea. It was placed in the jungle. The surgical cases were too much for one man, and the enervating climate and other conditions added to the strain; and as a result Ross's health broke down and he had to return to Australia. Before his health became so bad, he had resumed his practice.

As a surgeon he had a touch of genius, and his death is a loss to Geelong. He has left a widow, daughter and son.

Nominations and Elections.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Emery, Warren Frederick, M.B., B.S., 1946 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.
Kohler, Theodore George, M.B., B.S., 1946 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.
Tassie, Thomas Wilson, M.B., B.S., 1944 (Univ. Adelaide), Box 1369J, G.P.O., Adelaide.

MacIntosh, Ronald Mackenzie, M.B., B.S., 1941 (Univ. Adelaide), 20, Park Terrace, Eastwood.
 Fisher, Anthony Graham, M.B., B.S., 1946 (Univ. Adelaide), 2nd Avenue, St. Peters.
 Wyllie, Geoffrey Gurner, M.B., B.S., 1946 (Univ. Adelaide), 59, Burnside Road, Kensington Park.
 Coats, Douglas Alan, M.B., B.S., 1946 (Univ. Adelaide), 2, Rutland Avenue, Unley Park.
 Martin, Stanley Barford, M.B., B.S., 1946 (Univ. Adelaide), 15, Phillips Street, Somerton.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Fairbairn, Jean Margaret, M.B., B.S., 1943 (Univ. Sydney), 4, "Piper House", Longworth Avenue, Point Piper.
 Bleasel, Kevin Fabian, provisional registration, 1946 (Univ. Sydney), St. Vincent's Hospital, Darlinghurst, Sydney.
 Buckley, Edward Bligh, M.B., B.S., 1940 (Univ. Sydney), Box 26, Post Office, Narrabri.
 Cowlishaw, John Abbott, provisional registration, 1946 (Univ. Sydney), 47, Arnold Street, Killara.
 Farrar, John Frederick, provisional registration, 1946 (Univ. Sydney), 21, Princes Avenue, Vaucluse.
 Hytten, Frank Eyvind, provisional registration, 1946 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

The undermentioned have applied for election as members of the Tasmanian Branch of the British Medical Association:

Lowen, Walter, M.B., B.S., 1945 (Univ. Melbourne), General Hospital, Launceston.
 Suerth, Egon, M.D., 1934 (Messina), Beaconsfield, Tasmania.

THE FEDERAL MEDICAL WAR RELIEF FUND.

THE following contributions to the Federal Medical War Relief Fund have been received:

South Australia.

H. K. Fry, £21.
 W. C. T. Upton, I. S. Magarey, R. A. Haste, £10 10s.
 W. G. Heaslip, S. E. Holder, £10.
 J. B. Cleland, A. B. Russell, £5 5s.
 M. T. Cockburn, £5.
 J. R. Cornish, F. F. Heddle, A. H. White, £3 3s.
 G. E. Peters, J. A. Game, £2 2s.
 Total: £101 13s.
 Grand total: £13,094 12s. 6d.

Books Received.

"Venereal Diseases in General Practice", by Svend Lomholt, M.D. (Copenhagen), M.D. (Honorary, Riga), O.B.E.; 1946. London: H. K. Lewis and Company Limited. 94" x 64", pp. 234, with many illustrations, some coloured. Price: 25s. net.
 "Disorders of the Blood: Diagnosis, Pathology, Treatment and Technique", by Sir Lionel E. H. Whitby, C.V.O., M.C., M.A., M.D. (Cantab.), F.R.C.P. (London), D.P.H., and C. J. C. Britton, M.D. (New Zealand), D.P.H.; Fifth Edition; 1946. London: J. and A. Churchill Limited. 92" x 6", pp. 677, with many illustrations, some coloured. Price: 30s.

Medical Appointments.

Dr. B. G. Wade has been appointed President and Dr. J. W. v. R. Hoets a member of the Physiotherapists Registration Board of New South Wales in pursuance of the provisions of the *Physiotherapists Registration Act, 1945*.

Dr. L. W. Jeffries, Dr. P. S. Messent, Dr. E. A. Johnson, Sir A. M. Cudmore and Dr. H. H. E. Russell have been appointed members of the Medical Board of South Australia.
 Dr. D. A. J. Hunwick has been appointed Medical Officer at the Port Lincoln Hospital, South Australia.

Dr. K. G. Ball, Dr. R. M. C. G. Beard, Dr. D. C. Bennett, Dr. J. A. Bonnin, Dr. G. F. Cheesman, Dr. D. A. Coats, Dr. R. F. Condon, Dr. W. F. Emery, Dr. M. deL. Faunce, Dr. A. G. Fisher, Dr. G. B. Flak, Dr. V. L. Hawke, Dr. T. G. Kohler, Dr. S. B. Martin, Dr. R. N. McCann, Dr. W. J. McCann, Dr. M. C. Moore, Dr. M. E. Nancarrow, Dr. J. M. Nicholls, Dr. H. J. Pash, Dr. R. E. Russell, Dr. R. F. R. Scragg, Dr. Y. G. Seppelt, Dr. G. Sibthorpe, Dr. B. F. Venner and Dr. G. G. Wyllie have been appointed resident medical officers, Royal Adelaide Hospital, Adelaide.

Diary for the Month.

JULY 23.—New South Wales Branch, B.M.A.: Ethics Committee.
 JULY 24.—Victorian Branch, B.M.A.: Council Meeting.
 JULY 25.—South Australian Branch, B.M.A.: Council Meeting.
 JULY 25.—New South Wales Branch, B.M.A.: Branch Meeting.
 JULY 26.—Queensland Branch, B.M.A.: Council Meeting.
 AUG. 2.—Queensland Branch, B.M.A.: Branch Meeting.
 AUG. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 AUG. 7.—Western Australian Branch, B.M.A.: Council Meeting.
 AUG. 7.—Victorian Branch, B.M.A.: Branch Meeting.
 AUG. 8.—South Australian Branch, B.M.A.: Council Meeting.
 AUG. 9.—Queensland Branch, B.M.A.: Council Meeting.
 AUG. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 AUG. 13.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
 AUG. 20.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 AUG. 21.—Western Australian Branch, B.M.A.: General Meeting.
 AUG. 22.—New South Wales Branch, B.M.A.: Clinical Meeting.
 AUG. 22.—Victorian Branch, B.M.A.: Executive Meeting.
 AUG. 22.—South Australian Branch, B.M.A.: Council Meeting.
 AUG. 23.—Queensland Branch, B.M.A.: Council Meeting.
 AUG. 27.—New South Wales Branch, B.M.A.: Ethics Committee.
 AUG. 28.—Victorian Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmalm United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

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